Tests: Husqvarna CR390 and Yamaha XS11 Special

Inside Honda's Radical Racer

First Ever! GIANT KNOBBY TIRE TEST

CYCLE WORLD®

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1980 Yamaha XS Eleven Special

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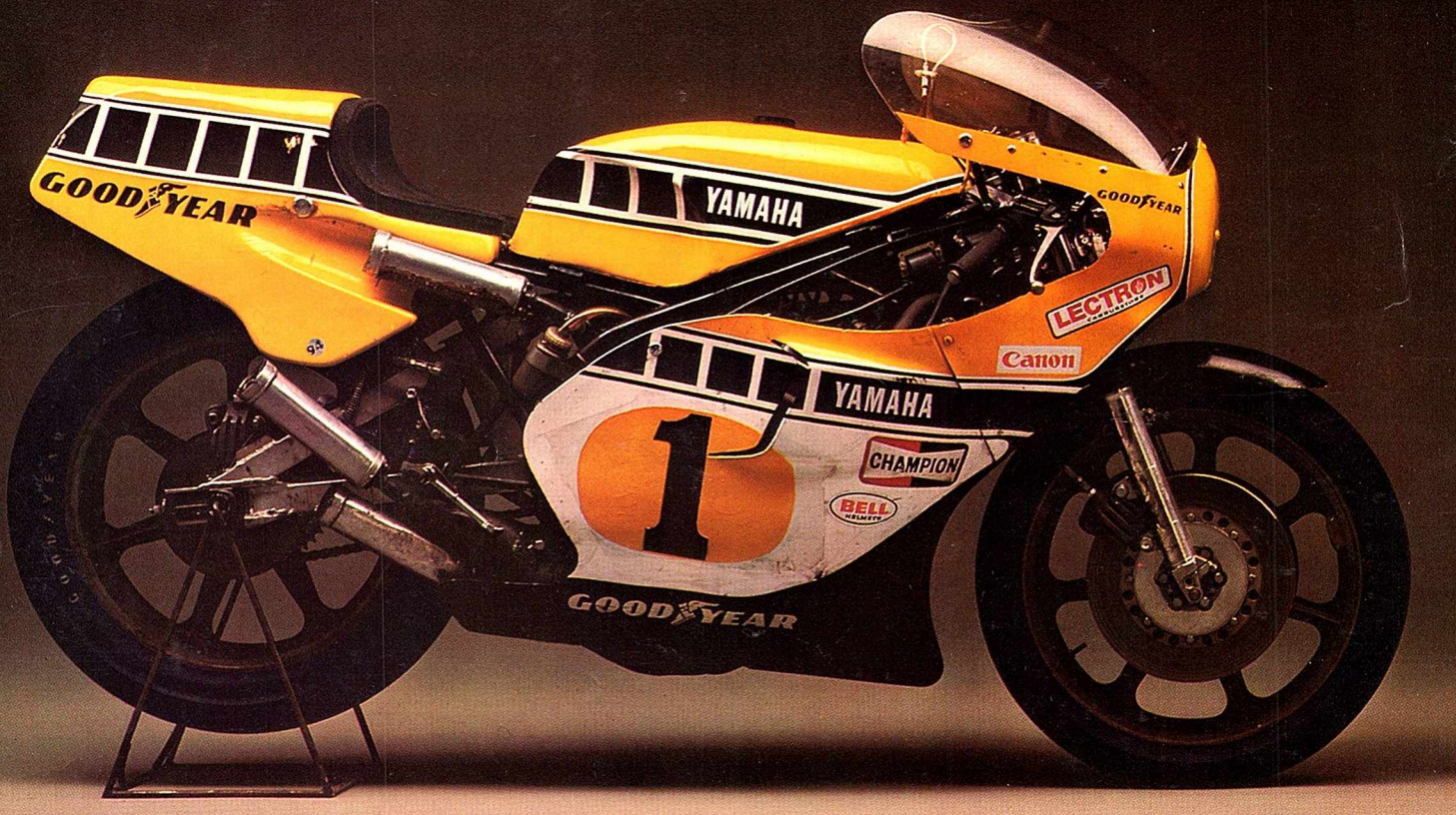

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Bob Hannah and Broc Glover run our YZ's

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Allan Girdler
Editor

John Ulrich
Executive Editor

Steve Kimball
Managing Editor

Ron Griewe
Test Editor

John Nutting
Technical Editor

Henry N. Manney III
Editor at Large

Jill A. Scheetz
Editorial Assistant

Paul W. Zeek
Art Director

CONTRIBUTORS

Steve Bauer
Ron Hussey
Bill Neale
B.R. Nicholls
Carlo Perelli
Doug Roy

EXECUTIVE STAFF

Richard A. Bartkus
Publisher

Robert J. Krefting
Group Publisher

Brian Van Mols
Associate Publisher
& Advertising Director

Francis Pandolfi
General Manager

Charles W. Rogers
Business Manager

Leon Rosenfield
Circulation Marketing Director

Lou Johnson
Production Director

ADVERTISING

Jim Hansen
Western Advertising Manager

Jim Frahm
Western Advertising Manager
1499 Monrovia Avenue
Newport Beach, California 92663
Telephone 714-646-4451
Teletype 910-596-1366

Dottie Silin
Advertising Coordinator

Ferdinand Mehlinger
Advertising Marketing Manager

Dick Barron
Midwestern Advertising Manager
100 Renaissance Center, Suite 1465
Detroit, Michigan 48243
Telephone 313-259-8008

Joe McNeill
Chicago Advertising Manager
303 E. Ohio St., Suite 2001
Chicago, Illinois 60611
Telephone 312-280-0349

Dennis Murphy
Eastern Advertising Manager

Guy Perdiue
Eastern Advertising Manager
1515 Broadway, Fifth floor
New York, New York 10036
Telephone 212-975-7405
Telex 125604

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UP FRONT

by Allan Girdler

A CRISIS OF IDENTITY

How much things have changed, I didn't appreciate until the morning I got a letter from an old pal. Two previous lives ago, he and I were newspaper reporters, covering the same events for rival big city papers. We were professional rivals and personal friends, I suspect because the only people who knew how good a job we were doing was us.

He's just written a book, about sports cars. Back in those days I drove a 1948 MG. For those who aren't familiar with the model, a 1948 MG was about equal to a 1948 Triumph Speed Twin: Lovely to look at, delightful to hear, but if there had been accurate road tests back then, the specifications tables for both machines would have had to contain something like;

Top speed.....Sort of.

and

Suspension.....Not so's you'd notice.

Not your terrific long distance car, in other words. But when we were leaping from story to story around a large state, he and the other chaps would get to where the action was and stay there until the last dog was indicted. Not me. No matter how far or how long, I drove that pretty little coal wagon from home every morning and back every night.

He asked me why, and (his letter said) he's never forgotten the answer. He wrote to ask if he could quote me, after all these years, because my reply perfectly suited the theme of his book.

What I said was "I love to drive."

That was me in '63.

Later that same day I was sitting, bolt upright, hands at 10 and 2, seat and shoulder belts lashed tight, eyes straight ahead, in our parking lot.

Around the corner came John the mail boy, in the company truck. "Geez," he shouted, "Allan's driving a car!"

He'd never seen me drive a car before.

Things have changed.

Why I was in the car is complicated. This was the weekend of Laguna Seca, vintage bikes in action at last and some support classes in the form of Kenny Roberts and students. (Nice of the track to give the crowd something to watch when the old bikes have done their show, I think.)

I had to be at the track early, and I had to get home Sunday night because my wife and I were going on vacation Monday morning. "If you don't get back on time," she said, "I don't know if I'll go without you or wait."

Which means, any husband will tell you, I would be well advised to get back on time. Sunday night, that is. With a 400-mile trip and a bike with 200-mile range, and the Sunday closings and all, the solution I came up with was to borrow a car from our companion publication *Road & Track*.

Not just any car.

A VW Rabbit with diesel engine. Good mileage, I was promised, and the little box would go at least 400 miles between fills, so I could make the return non-stop, no problem.

Or so I thought. The company librarian, who knows cars and owns a Triumph Trophy so he's actually one of us, brought the VW to our shop, which is why I was taking lessons in the parking lot.

"How do I operate it?" I asked.

"It's just like a gas-powered Rabbit," Chuck said.

"I've never driven a gas-powered Rabbit," I said.

This from a man who used to hold an international racing license for cars.

When I was racing cars, and taking cars seriously, bikes were a hobby, something to fiddle without effort. Then one day I realized that I was having more fun riding my 250 than I was having racing my sports car, so I sold the car and started riding the bike to work and to the woods, and the kids got old enough for bikes . . .

I am not a moderate man. When I was a demon driver I always had two or three cars. When I became a father, I fathered five children. When I got married I stayed married. Due to the nature of my job—we test 50-plus bikes a year and I ride them all—I don't need to own a motorcycle. So I have two and am negotiating for a third.

Committed. That's the word I want, committed.

But not blindly so. The mailboy had never seen me drive a car but that doesn't mean I don't. I own a car and a truck and I see nothing wrong with that.

I may not be up to speed when it comes to modern motor cars, but that didn't mean I was unaware that driving an economy sedan 800 miles would be an exercise in boredom. I expected to be bored and cramped and trapped in traffic . . . and I was.

What I didn't expect was loss of identity.

I like bikes. I think bikes. I see bikes. During this trip, every time I saw a nice one, restored Indian Scout to dressed Yamaha 11 to John Player Replica Norton, encased in the car as I was, I had no way to convey my appreciation. I saw people going to the races and had no way to share>

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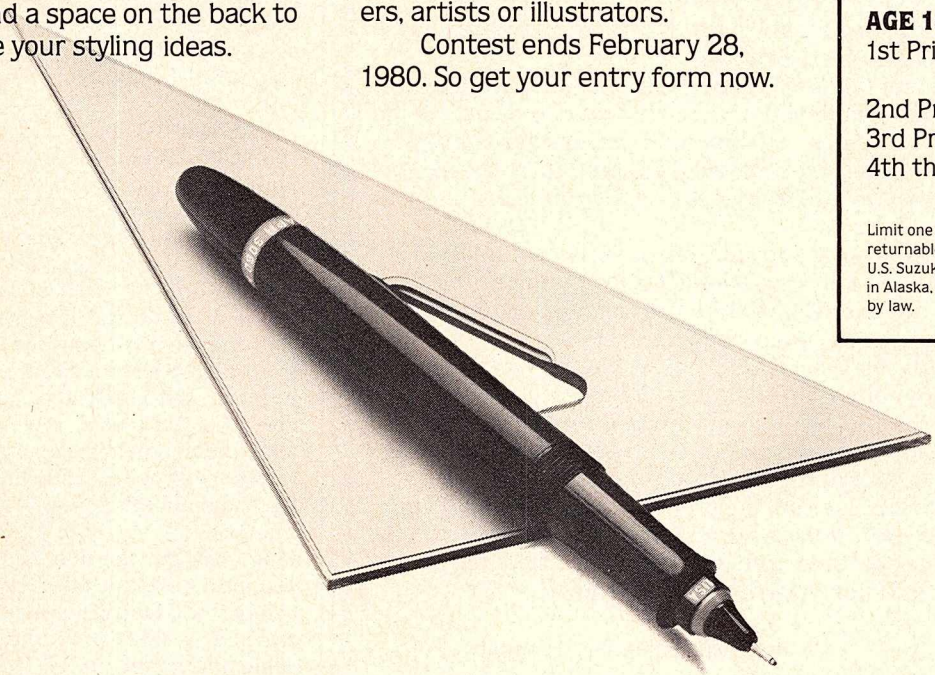

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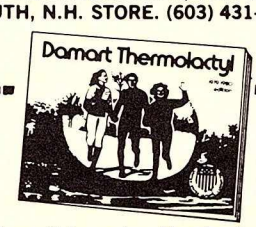

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UPFRONT

my anticipation, to let them know we were on the same wavelength. I was in fact a bit embarrassed to be riding in the sedan while everybody else was out there on two wheels, having a better time than I was. At rest stops I dared not speak, for fear of sounding like the people Henry Manney always meets, the ones who say "Usta have one myself."

How could I say I ride? If I ride, what was I doing conducting a mobile road block, a mobile road block that rattled like a connecting rod just before it flings itself through the cases?

Then I saw one of my heroes, well, heroines. An FLH80, cream and tan, full dress. It was Hazel Kolb, the lady who rode around the continental U.S. and then did such a good job for us all on TV.

I wanted to say hello.

How? How could I let her know the wild-eyed man in the noisy car was one of us, not one of them?

All I could think of was to pull my CW jacket out of the back seat, hold the emblem up against the window and honk the horn.

It worked. We had a nice chat and she rumbled away on her Harley to the admiration of all who looked on.

I motored away, feeling more and more like a man who wasn't who he is.

Finally I got to Monterey. The town is crowded on race week and the best I'd been able to do was arrange for a semi-firm reservation, in somebody else's name. By all rights I should have gone directly to the hotel and checked in, to be sure I'd have a place to sleep.

Instead, I went to the track. John and Pat were already there, with the staff truck, used to haul photo gear and (by pre-arrangement) my bike. I slid to a stop, flung open the van doors and rolled Red Rooster II down the ramp. With the aid of a passerby, Craig Vetter as it happened, I executed a deft bump start and began riding around the pits.

"You really like that thing, huh?" said Craig.

Well, sure.

But more to the point, I was glad to be home. ◘

Illustration by P.M. McKenna

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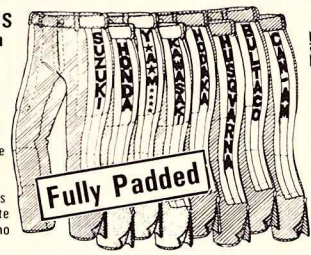

71 Yam	72 Hon	73 Suz	74 Kaw
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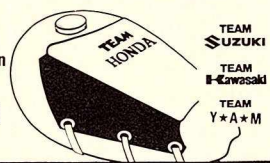

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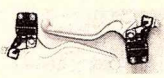

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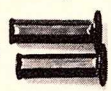

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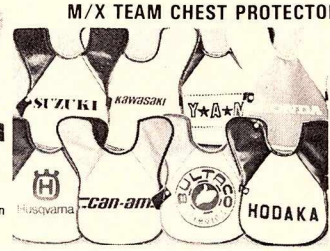

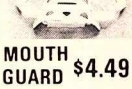

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LETTERS

SOME KIND WORDS

Thanks for the Sherpa T test in the July issue. It's nice to know there's a magazine that hasn't forgotten about us trials riders.

Also, the pictures were excellent. Goes to show you that a trials bike in the hands of a good rider can be every bit as exciting, challenging and rewarding as a race across Baja or bustin' berms alongside Bob Hannah.

Maybe the American trials boom didn't come off like the Japanese manufacturers hoped, but the sport is still alive and well. With the help of magazines like yours perhaps more people will be introduced to this great form of motorcycling.

Jay E. Martin
Leechburg, Pa.

WHO'S THE CHAMP?

First, I would like to compliment you on the Yoshimura road race article (May, 1979) and the Vance and Hines drag race article (Aug. 1979). They were both excellent.

However, I would like to point out a few discrepancies on page 53 of *Cycle World's* August issue (paragraphs one and two) about who the record holder and 1976 champion was—Bob Carpenter or Terry Vance.

Paragraph one: You stated that Vance went on to take the pro stock championship for the year setting the record at 9.74 sec. at 137.19 mph. Where in fact, Bob Carpenter went on to take the championship for that year and also held the mile per hour record at 139.96. Vance held only the E.T. record.

Paragraph two: You stated that Vance and Hines switched to Kawasaki, setting a 1976 record at 9.66 sec. at 139.90 mph. Where in fact, Carpenter held the record in IDBA at 9.50 sec. and AMDRA at 9.51 sec. Vance and Hines held only the speed record for that year.

Although these differences may seem trivial, to someone like Bob who has spent most of his adult life and devoted so much of his time, energy and money trying to achieve these goals, it is very important.

Dennis McCabe
CM Performance Products

Carpenter held the 1975 championship in the now-defunct AMDRA. Vance and Hines did switch to Kawasaki and set a new IDBA record in 1976. Carpenter broke that record later in the season, but Vance won the IDBA championship.

THE BEST PEOPLE

Thanks for printing my letter (March, 1979). As the result my bike has been identified and dated.

Thanks to all the people who wrote and called. I may not get back to all of you but don't think I don't appreciate it because I do, very much. To the man in Boston, it was nice talking to you but I forgot your name.

All the help I've gotten proves that bikin' people are the best people.

Anybody know where I can find a 1225-7 HRD model 90 frame?

Tony Weeks
P.O. Box 93
Sheridon, Ore. 97378

LOVERS' QUARREL

My boyfriend has a Laverda Jota. I like bikes, but he is a real cafe freak and insists that it is "incorrect" for the passenger to hang onto the driver. Since the Jota doesn't have a handle, that leaves me nothing to

continued on page 16

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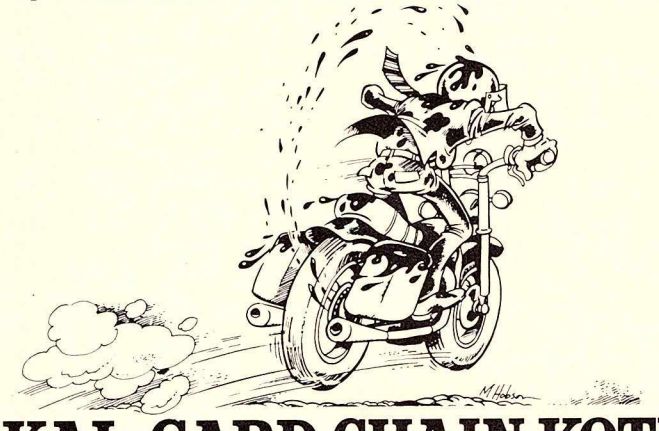

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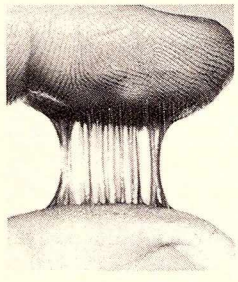

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But you know, this course would look a lot different if you could get your hands on a 4-stroke that really worked. Well, now you can.

The XR500, XR250, and XR200. Each one of them gives you the tremendous powerband of a 4-stroke single. But since they're a lot lighter than you'd expect, they give you the kind of handling you need to get serious out here.

And that means that from now on, no enduro course will ever look the same.

THE START.

Right here, you can start to rethink your whole riding strategy. Most guys tend to hold back a little here because they'll need every ounce of energy to finish the last loop. But since you've got that nice wide 4-stroke powerband, you can afford to set your pace a little hotter right from the start.

TURNS.

You're probably used to blasting around every turn with a huge powerslide. It's a lot of fun, but in a hundred-mile enduro, it gets kind of tiring. That's one more reason why you'll appreciate an XR. Because, with the grip it gets from those exclusive claw-action tires, and the front-end geometry of this thing, you can square off the turns just by steering instead of sliding. And get yourself through every bit as fast, too.

ROCKS.

Sooner or later, you're going to spot a big, unfriendly patch of rocks. So just back off the throttle a notch and watch the way the whole bike goes to work for you. Between the 4-stroke torque, the light weight, and the long-travel suspension, you just about dance your way through here. And when you're picking your way through all these rocks, that folding-tip gearshift lever and brake pedal are worth their weight in unobtainium.

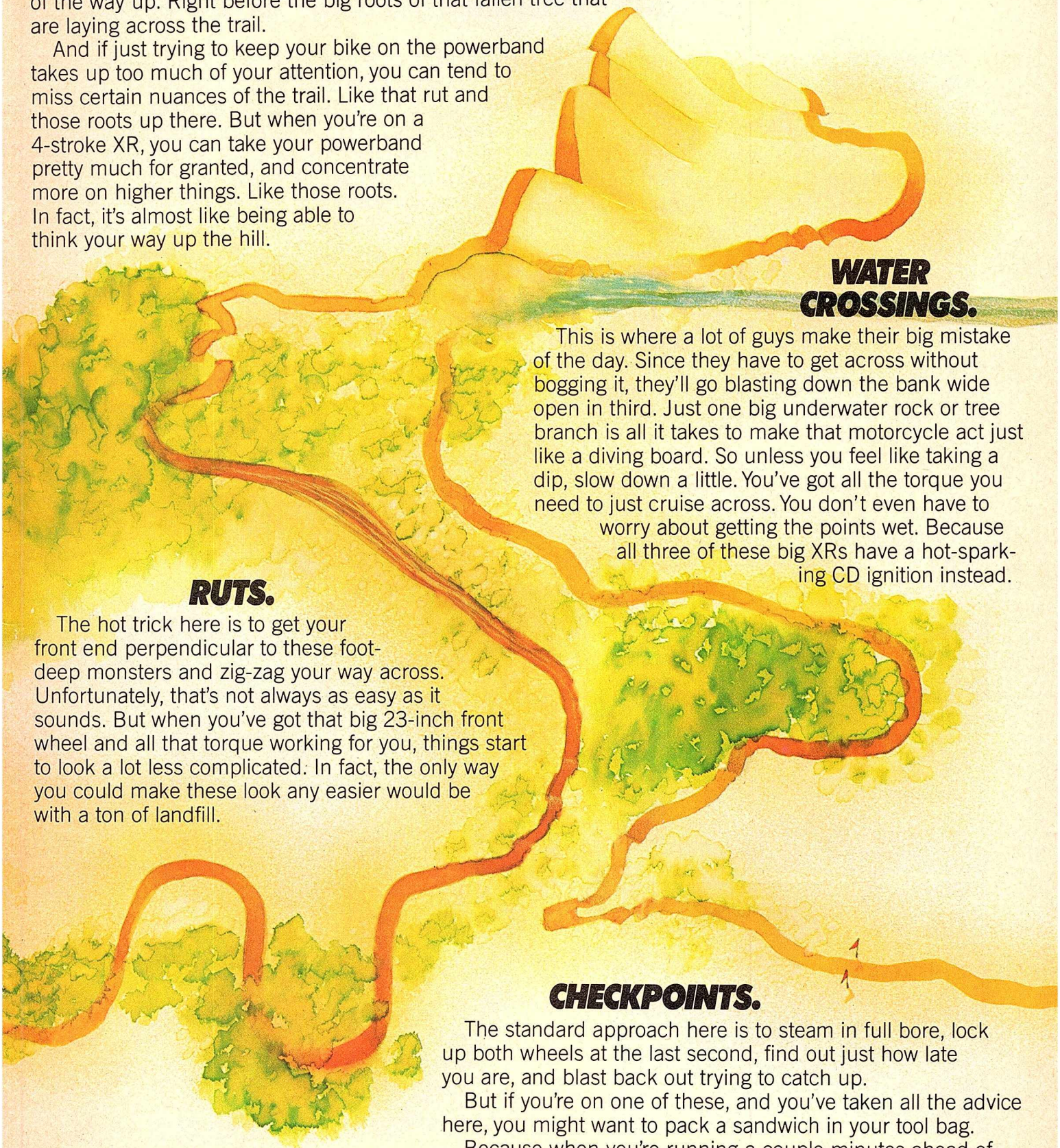
WHOOP-DE-DOOS.

Here's a very advanced theory for you. Just turn it on and go. That big 23-inch front wheel on the XR500 and XR250 can't drop down as far into every groove as a smaller one, and the torque keeps your whole front end nice and light. So you can just power right along and kiss the top of every other whoop-de-doo with your front wheel and really make some time.

UPHILLS.

This is where the sadists who design these courses really let their imagination run wild. Somehow, they always manage to find a catastrophe of an uphill with a long, slippery section about ⅔ of the way up. Right before the big roots of that fallen tree that are laying across the trail.

And if just trying to keep your bike on the powerband takes up too much of your attention, you can tend to miss certain nuances of the trail. Like that rut and those roots up there. But when you're on a 4-stroke XR, you can take your powerband pretty much for granted, and concentrate more on higher things. Like those roots. In fact, it's almost like being able to think your way up the hill.



WATER CROSSINGS.

This is where a lot of guys make their big mistake of the day. Since they have to get across without bogging it, they'll go blasting down the bank wide open in third. Just one big underwater rock or tree branch is all it takes to make that motorcycle act just like a diving board. So unless you feel like taking a dip, slow down a little. You've got all the torque you need to just cruise across. You don't even have to worry about getting the points wet. Because all three of these big XRs have a hot-sparking CD ignition instead.

RUTS.

The hot trick here is to get your front end perpendicular to these foot-deep monsters and zig-zag your way across. Unfortunately, that's not always as easy as it sounds. But when you've got that big 23-inch front wheel and all that torque working for you, things start to look a lot less complicated. In fact, the only way you could make these look any easier would be with a ton of landfill.

CHECKPOINTS.

The standard approach here is to steam in full bore, lock up both wheels at the last second, find out just how late you are, and blast back out trying to catch up.

But if you're on one of these, and you've taken all the advice here, you might want to pack a sandwich in your tool bag.

Because when you're running a couple minutes ahead of time, somewhere right in front of your typical checkpoint, you just might find a nice place to sit down and have some lunch.

THE 4-STROKE XR ENDU
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If there's one thing every good enduro rider loves, it's the chance to take unfair advantage of the other guy.

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And on all three of the big XRs, the engine is a stressed component of the diamond-configuration frame. Which helps keep the weight down. That's one reason why they handle like they do. Of course, the suspension doesn't hurt, either. Up front, you've got leading-axle forks with 8.5 inches of travel or more. In back, lay-down, inverted, gas-charged shocks that give you 7.5 or more inches of rear wheel travel.

On the XR500 and XR250, there's a 23-inch front wheel that floats over bumps, tracks straighter, and stops shorter. And on all three big XRs, you've got Honda's exclusive self-

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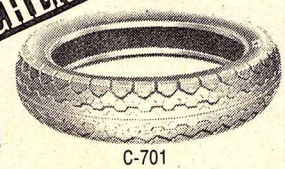

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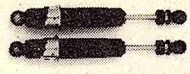

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LETTERS

continued from page 10

hang on to. He says a good rider should use legs only, but I don't know if I'll live long enough to become one at this rate. I was all excited when he got the bike but this is making riding with him a real nightmare.

I tell him he's been riding too long with guys on the back, and he's missing the whole point of having a bike. So whose got the problem, him or me?

Cynthia Bloor
Santa Fe, N.M.

Half the fun of a fast bike is that it makes girls hold on tight. You'll only be able to safely hold on solely with your legs if your boyfriend never gasses it.

Sporting two-up riding works best when the passenger has her (or his) weight firmly braced, so the rider only needs to balance the bike and doesn't have to guard against weight shifting at the wrong time.

RACE WATCH

Please note a correction to the Race Watch article about the AFM "On Any Sunday II" six-hour endurance race in the August issue.

The motorcycle ridden by Kevin Stafford and Steve Sowden to fifth place overall was owned and prepared by myself. I am an independent mechanic specializing in the modification of Kawasaki 900s and 1000s.

The motorcycle was based on a 1976 KZ900. It's displacement was 987cc.

Tom Morgan
San Diego, Calif.

DEFINITELY THE BEST

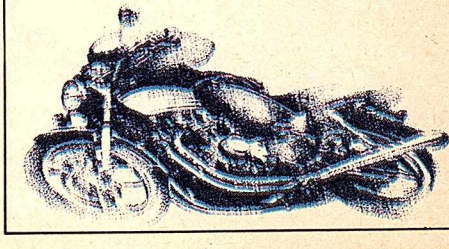
Just brousing through your September issue, glad to see you testing the smaller bikes (Suzuki GS425). I've always been partial to these bikes (Honda CB400F, 63,250 miles; CB450, 36,012 miles so far).

English riding suits are definitely the best. I still own a vintage 1971 Belstaff Trailmaster 500XL suit that is now about 80 percent waterproof. The lining has gotten frayed. The snaps and zippers work good.

Heavy rain will bring seepage at the knees and elbows after a half-hour. The early style pants lock the snap at the waist. Cost in 1971 in Germany was 425 DM (4 DM = $1) so costs are not up that much.

The Parilla story brings me back to 1964–65 and the Parilla was the hot set-up. Beautiful motorcycle.

Alan R. Stanley
Hemet, Calif. >



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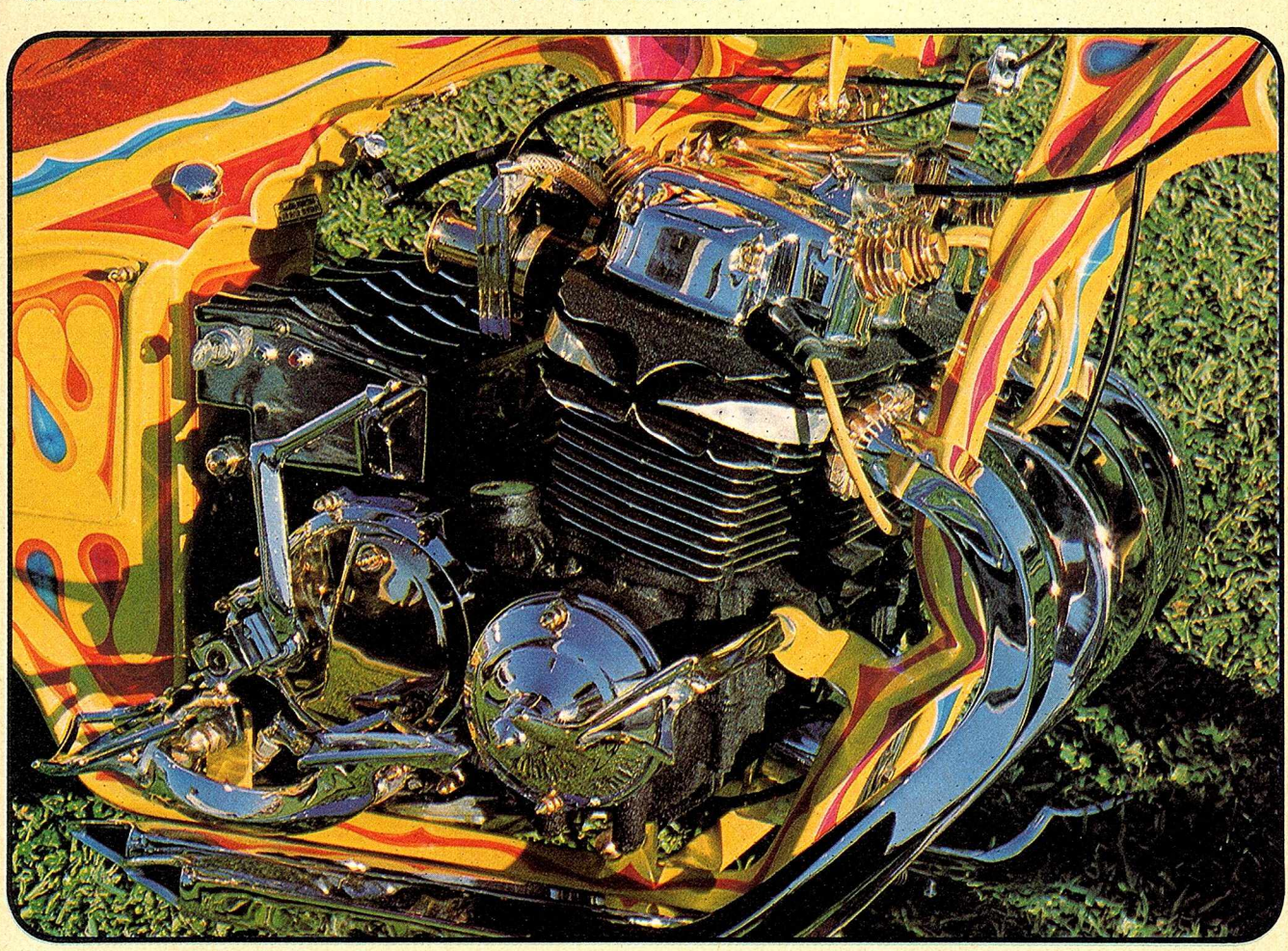

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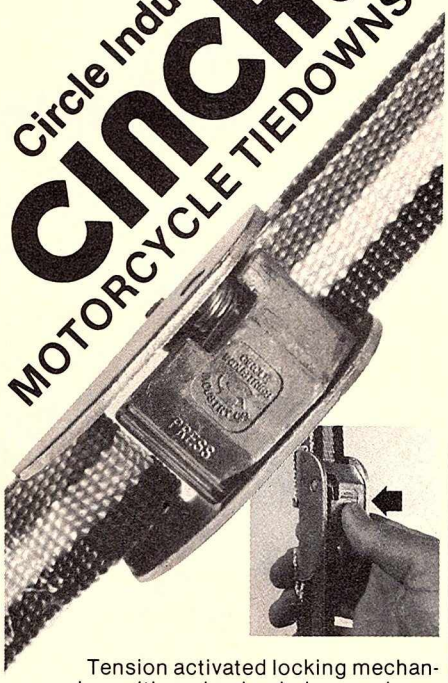

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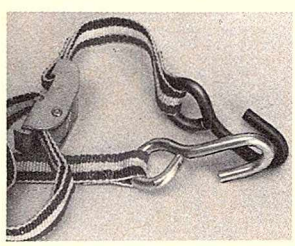

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LETTERS

GUZZI DELIGHT

As an older Guzzi rider (the Guzzi a 1969 and me a 1932 model), I was delighted to see the editorial and Roundup sections of your magazine reminding our people that motorcycling isn't like it used to be and won't ever be that way again. The editorial on the vintage racing hit an old soft spot for me. Keep it up.

After reading "Another Law" and "High Priority" in the Roundup section, I came away a bit sad and disgusted with those who make up our federal government. It would seem that they've forgotten that safety, like religion, just can't be forcefed effectively. The people just spit it out when they are out of sight of the person administering it. I wish Calamity Claybrook and her NHTSA circus would smarten up and realize that if they haven't been able to reduce motorcycling accidents and fatalities with the nearly 15 years they've had to work on it, there's a strong indication that they've blown the whole mess and it's time for them to let the motorcycling organizations do something about it. After all, at least the motorcyclists have the expertise and the will to do something realistic about motorcycling safety, their motive's the best there is—their lives!

As a parting thought, I'd like to recommend that those really interested in motorcycles and motorcycling start getting involved in one or more of the motorcycling organizations that are trying to keep the bureaucrats out of our personal lives and our machines, and then get personally involved in what that organization is trying to do for the nation's motorcyclists.

Lee Van Hoesen Jr.
Weaver, Ala.

COIN'S OTHER SIDE

After reading your Up Front column in July, I thought that you might like to hear about the other side of the coin.

During a motorcycle trip from Germany through the Swiss Alps and the south of France to Spain, my wife and I spent most nights in modest pensions. However, we planned our trip so that we could splurge at three of France's finest hotels. Our treatment there would serve as a good example to the management of the hotel you visited.

For example, we rode up to the Jules Cesar Hotel in Arles, road-dusty and especially grimey after a maintenance problem. The staff demonstrated why this hotel has its five stars. They treated us as though we had just stepped out of a chauffeured Mercedes limo.

Somehow Europeans seem to have a much more mature and enlightened attitude toward bikers.

Richard W. Selph
Austria

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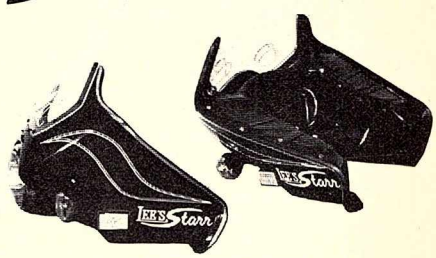

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Now that you've made the first decision, you'll want to start your kid out right on a Kawasaki mini. Because Kawasakis are built by people who understand your child's riding needs. And we've got a bike for every beginning rider.

KD80M

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You might get attached to this trail bike yourself. The KV75 has an automatic clutch, 3-speed transmission,

KV75

and handlebar brake levers. Just fold down the handlebars, and take it anywhere in the back of your car. (It won't leak gas or oil.)

Here's a dirt bike of another color. Lime green, like its racing cousin, the KX80 mini (not shown). The KDX80 has a motocross frame and suspension, leading

KDX80

axle front forks, a 16″ front wheel, and an 82cc 2-stroke, reed valve engine.

Look, it's a street bike. It's a dirt bike. It's the KM100 dual-purpose mini street-legal and dirt-safe. And its 99cc 2-stroke rotary valve engine goes a long way on a tank of gas.

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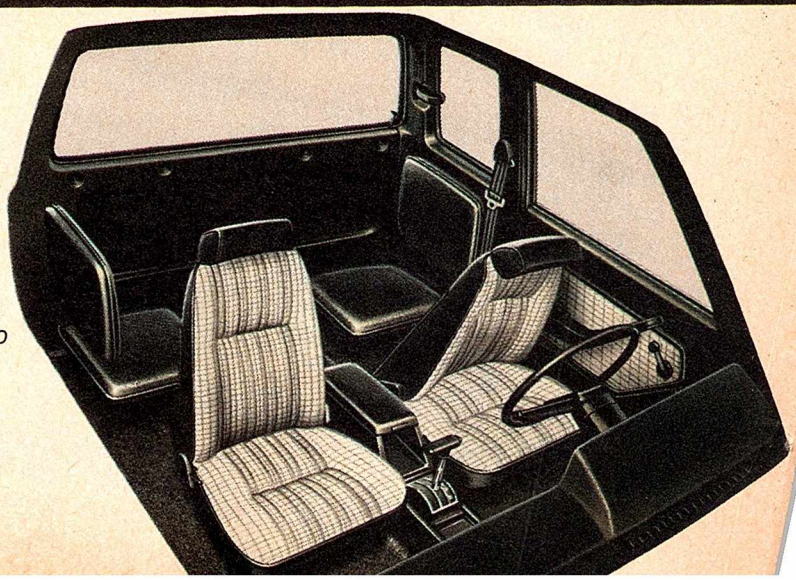

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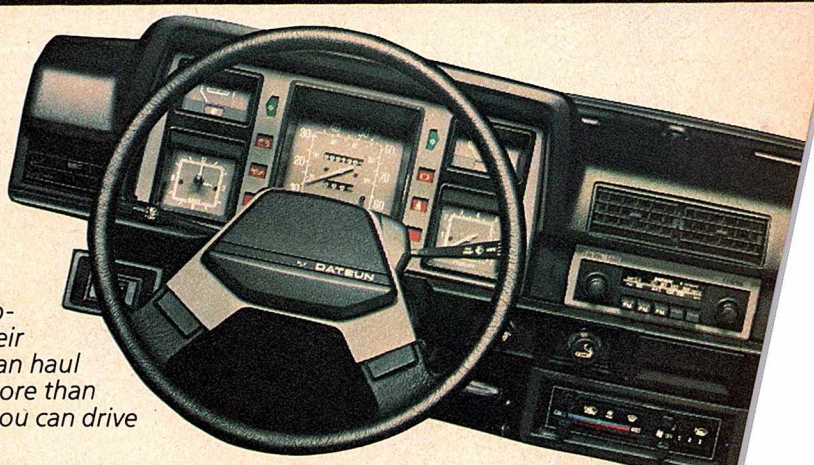
EPA ESTIMATED PG **32** EPA ESTIMATED HIGHWAY

ates for comparisons. Actual ay differ, depending on speed, and weather. Actual highway obably be less than est. ileage lower.



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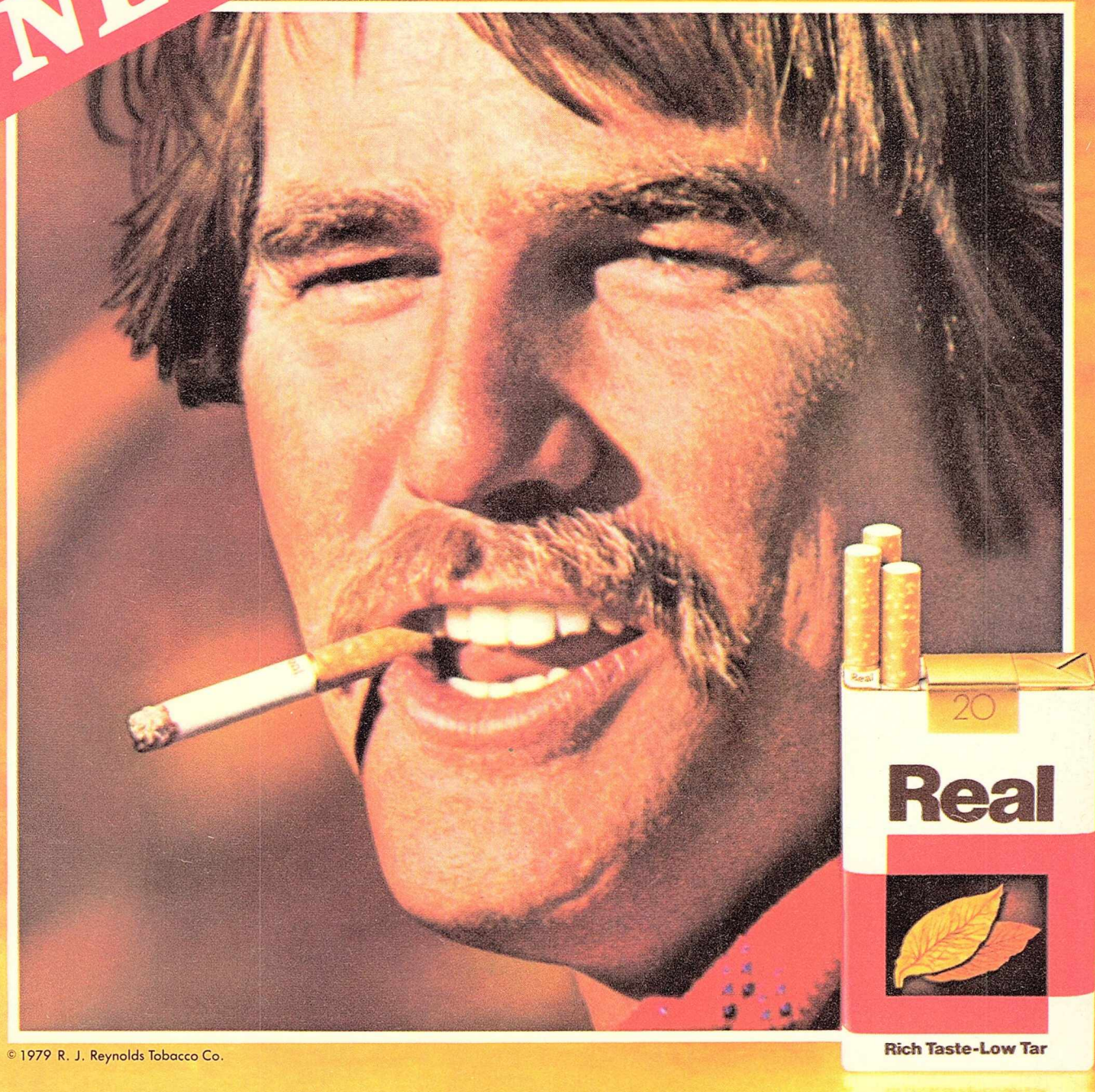

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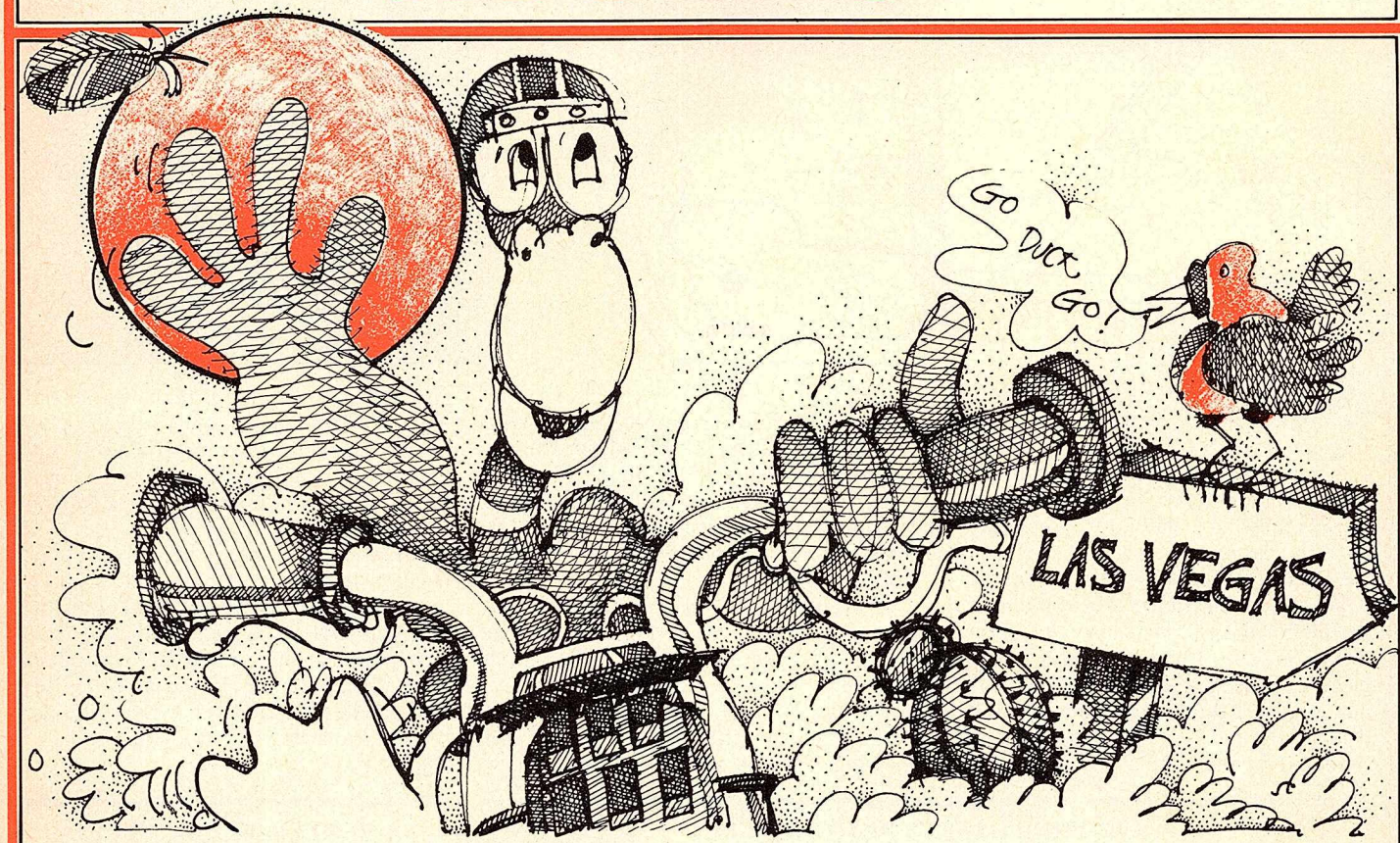
ROUNDUP



THE DUCK FLIES FREE

At last, after the judge told both sides to settle the case themselves or he'd take care of both sides, the Phantom Duck of the Desert and the Bureau of Land Management have reached an agreement and the Duck and his friends are not going to jail.

It'd been a long struggle. Several years ago the BLM declared itself unable to process the forms for the Barstow to Vegas desert race, formerly the best known and most popular cross-country event in the U.S. One of the competitors, real name Louis McKey, didn't like the loss of the race so he and a few friends met on the anniversary of the event and rode dirt roads and trails to west of Vegas, as sort of a memorial. As part of the nostalgia, McKey billed himself as the Phantom Duck of the Desert.

The memorial ride grew, from a handful to a few dozen, and the event became a form of political protest. When the Duck got into the newspapers, the BLM noticed. BLM officials went to court and got an injunction ordering McKey and friends not to organize or encourage the ride.

The order came too late, as scores of riders turned up at the traditional starting line and rode open trails and powerline roads to the old finish area. After the ride, BLM took McKey to court, on a charge that he was in contempt of court for violation of the earlier order.

District Court Judge Warren J. Ferguson, who issued the original order after McKey and BLM couldn't agree on a ride route that would have set the stage for an event permit, told both sides to settle the matter themselves.

The entire episode shouldn't have happened, the judge said. Off-road riders and government agencies have rights and procedures to follow and neither side did as much as could have been done to avoid the confrontation.

The Duck's attorney drew up an agreement, signed after some hesitation by the BLM.

The important parts were first, the Duck is required to obtain permission before encouraging people to take part. Next, the contempt citation against the Duck was dismissed.

Third, the BLM and the AMA will prepare a monitoring system, so there's some assurance that trail rides for large groups of people can be held without damage to the area.

As the punchline, BLM is required to give all due consideration to an application for such a ride, even if the applicant is the Phantom Duck of the Desert.

What will happen next, we can only predict. Our printing schedule is such that at the time of writing, the monitor plan is still being prepared, and by the time we know if the ride will take place, it will be too late to issue invitations.

Some of the CW crew have been on all the Duck's B-to-V rides. If it's legal in 1979, we'll be there again. The traditional date is Sat., Nov. 24, the Saturday after Thanksgiving.

This is *not* an invitation. But, if any off-road riders see a notice in their newspapers that the ride will take place, legally, taking part will be the best way to show the Phantom Duck of the Desert that his work has not been in vain. >

Illustration by Doug Roy

SMOOTH STARTING BONNEVILLE

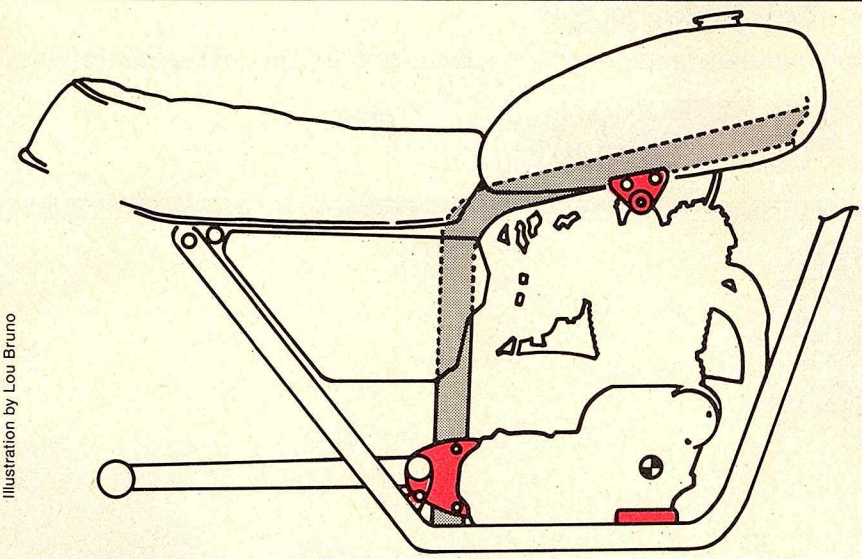
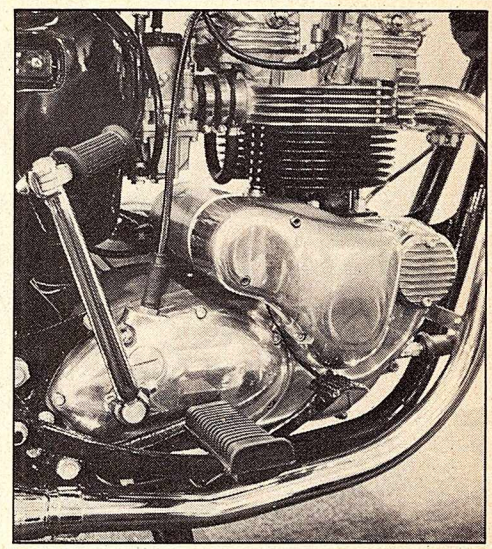


Illustration by Lou Bruno



Despite the air of gloom that has surrounded the Triumph factory in England recently because the new Conservative government asked for the payment of $2.8 million in overdue interest charges, work is pressing ahead at the co-operative on technical improvements that will take the factory successfully into the '80s.

An electric start prototype, planned for production in 1980, was shown at the Earl's Court Show in London. It uses a Lucas electric starter originally made for a Japanese car by Lucas's Australian subsidiary, driving through 40:1 reduction gearing outboard of the timing gears to a sprag clutch.

According to Triumph engineering manager Brian Jones, the starter, using a 14-ah Yuasa battery, passed all of Lucas' sub-zero cold start tests with flying colors.

The other improvement is the adoption of vibration absorbing rubber mountings for the engine.

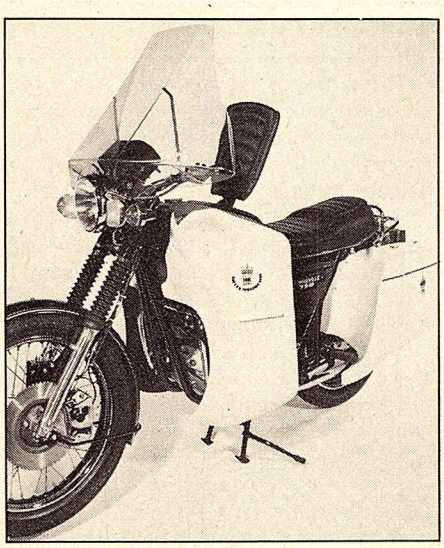
Designed by Bernard Hooper, the system overcomes many of the shortcomings of the Norton Isolastic system which Hooper also designed.

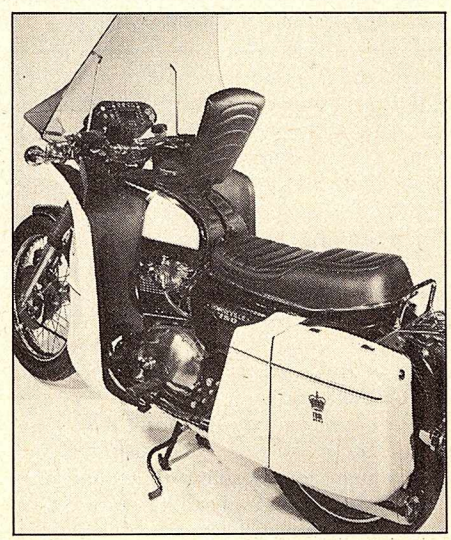
On the Triumph, the engine pivots on large plates concentric with the swing arm bearings with a large rubber support below and a smaller one above. To allow fore and aft movement, the complete engine-swing arm assembly is supported on two small links below the engine pivot, the movement being limited by the shear force on the lower rubber support.

According to Jones, it makes the Bonneville as smooth as a Commando at speed but without the annoying shaking at low revs—and still with good handling.

With less tooling required for production, the rubber-mounted Bonnevilles could be in the dealers' showrooms before the electric start version, maybe in early 1980.

ANOTHER SAFETY MOTORCYCLE





Another prototype safety-first motorcycle has been developed, this time by the British Transport and Road Research Laboratory. Based on a 750cc Triumph Bonneville, the British bike looks like a normal Bonneville with huge fiberglass leg shields in front, odd-shaped saddlebags in back, a molded windshield on the handlebars, and a large, padded chest protector sticking straight up from the gas tank. Among the features of the experimental cycle are anti-lock brakes, sintered metallic brake pads for improved wet weather braking performance, and a digital speedometer, though the value of a digital speedometer for improving safety seems questionable.

A VETTER MOTORCYCLE

Craig Vetter has "amicably settled" a legal dispute with Rick Binet who purchased the Vetter Corp. from him last year. The agreement, Vetter said, allows him to develop his Mystery Ship roadracer and, ultimately, will result in a Vetter motorcycle.

Vetter has begun work at his San Luis Obispo, California design studio on an exotic, low volume superbike that will bear his name when finished. No details of Vetter's motorcycle are available yet and there's no timetable on its release.

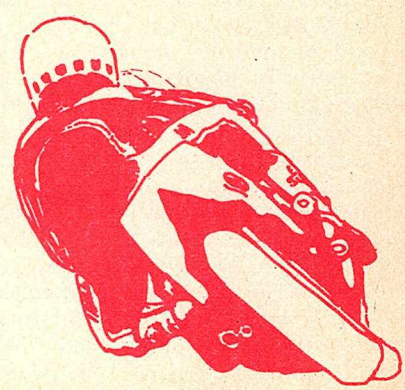


Illustration by P.M. McKenna

BMW RUMORS

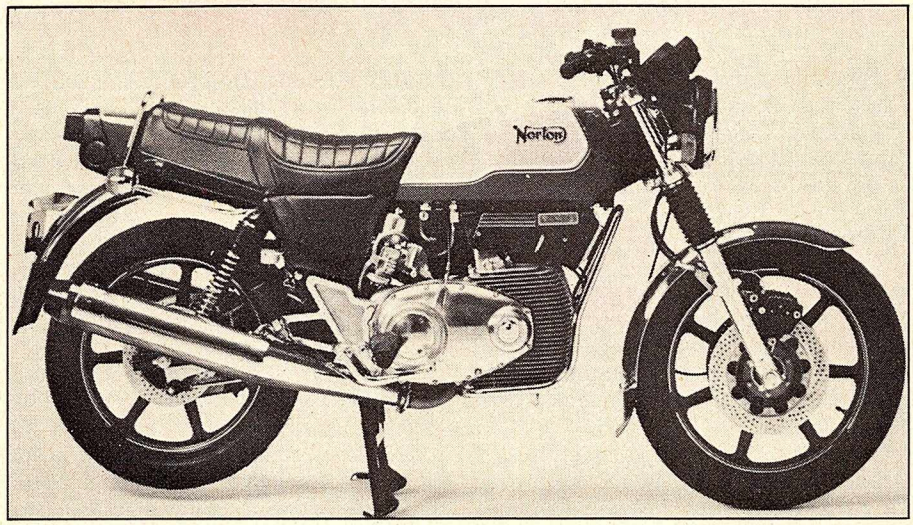
Reports from Europe have been predicting a new three or four cylinder BMW. BMW has shown a modular-style inline Triple that can be built as either a street or off-road bike. Later photos in the European press have shown an opposed or vee-Four BMW.

For 1980, however, the BMW model lineup will remain as it was in 1979. Smallest of the line will continue to be the R65, but the price on BMW's smallest model is expected to increase sharply. Next up the line is the R80/7, then the four Thousands: R100T, R100S, R100RT and R100RS.

BMW sales during the first part of 1979 have been very good. Butler and Smith, the BMW importers for North America, reported the R65 and R100RT models were sold out early in the year.

Although the BMW lineup will be the same, there will be the usual annual improvements to specific models. On the RT, for instance, the fairing will now come with a thicker plexiglass windshield, as thick as those on American fairings. The windshield size will be increased somewhat for more protection. The storage pocket covers on the RT fairing will have the locks repositioned so the key fits easily and so the covers are more secure. All 1980 models will use lower compression engines that can run on low octane American fuels.

WANKEL DELAY

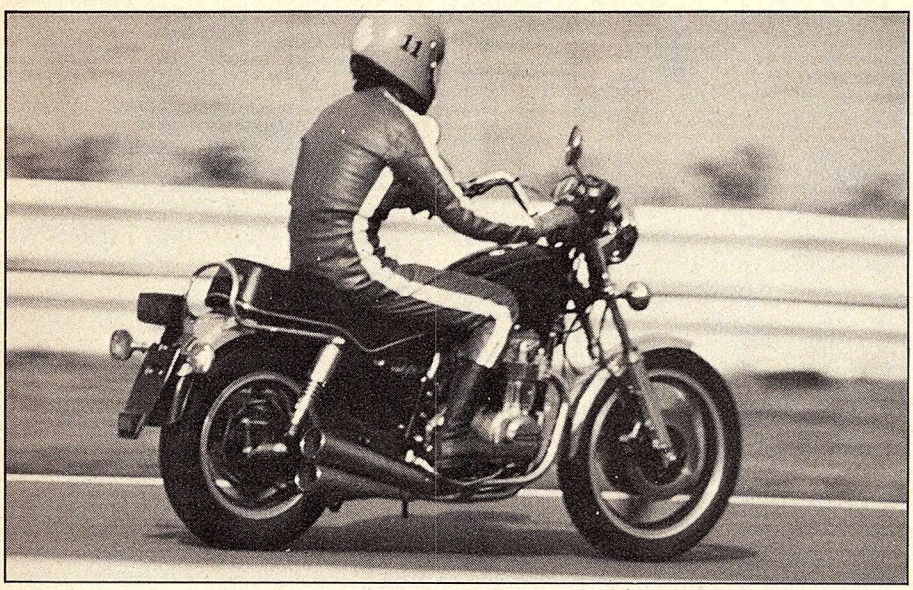


Britain's long-awaited foray back into the superbike market, the Norton Wankel, has been further delayed.

Plans were for the 135mph twin-rotor machine to be introduced during September but Dennis Poore, head of the holding company that owns both the new BSA Co. Ltd. (making mopeds and Yamaha-powered trail bikes) and Norton Motors (1978) Ltd., which has been developing the rotary-powered machine for production, has been reported to have indefinitely delayed the bike's first appearance because of the uncertain political atmosphere surrounding the Triumph co-operative.

The machine is, however, ready to go. Twenty-five production prototypes have been built for evaluation and if the experience of our technical editor is any guide, it should be a jet. Weighing 450 lb. wet, it develops 75 bhp at the back wheel, zips through the quarter mile in under 12 sec. and gets 45 mpg to the gallon. There won't be many made though in the first year, perhaps 500. Not surprising at the $7000 asking price in Britain.

ANOTHER CUSTOM



Spied at the Suzuka race circuit at the time of the Suzuka Eight Hour was this Honda CB650 Custom. Unlike the 1979 CB650, the Custom has four short mufflers, not the two long mufflers. The stepped seat extends down lower on the side of the motorcycle for styling. The gas tank looks like the stubby tank on the CX500 Custom and the bars pull back like those of the CX500 Custom. It still has the black-painted reversed Comstar wheels, sohc Four motor and straight-leg forks, but there are twin front disc brakes on one of two Customs seen, chromed covers on the rear shocks and the same hollow shaft mirrors used on the 1979 CB750s.

The semi-choppers remained big sellers in 1979, we're told, so expect more of the bucko-handlebar, fat rear tire, short muffler, low seat machines for 1980.

OUR NEW WIZARD

New on the masthead this month, although not new to the pages of the magazine, is John Nutting, our new Technical Editor.

John is overqualified for the job. He's a graduate engineer, which every tech. ed. should be, and he's worked in computer programming, so he can understand our onboard test rig and make it work even better than it already does.

Next, John is an experienced journalist. He joined the staff of *Motor Cycle Weekly* and then moved up until he was editor of *Which Bike?*, an English magazine that does nothing but test and evaluate.

As the clincher, John is a bike nut, and an amateur racer. He's been writing for CW for some time now, so when the technical editor's job became vacant, we asked him to join the staff.

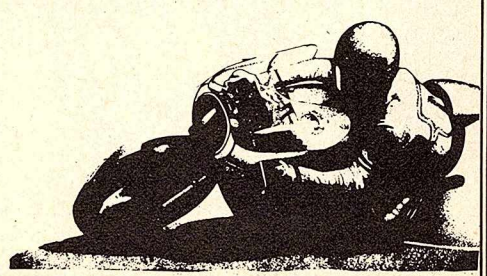


Illustration by Aline Patterson

YAMAHA XS11 SPECIAL

CYCLE WORLD TEST

■ Forget the rumors. There's no V-Four. No enlarged Elevens. Yamaha's flagship, for the third year in a row, is the XS Eleven. And the most Eleven you can buy is still the Special, with low, stepped seat, handlebars that would look appropriate on the hood of a cowboy Cadillac, and the same clean styling that has made Yamaha's Specials a success story.

There have been changes made to the Eleven, both mechanical and cosmetic. Are the changes improvements? The answer depends on the point of view.

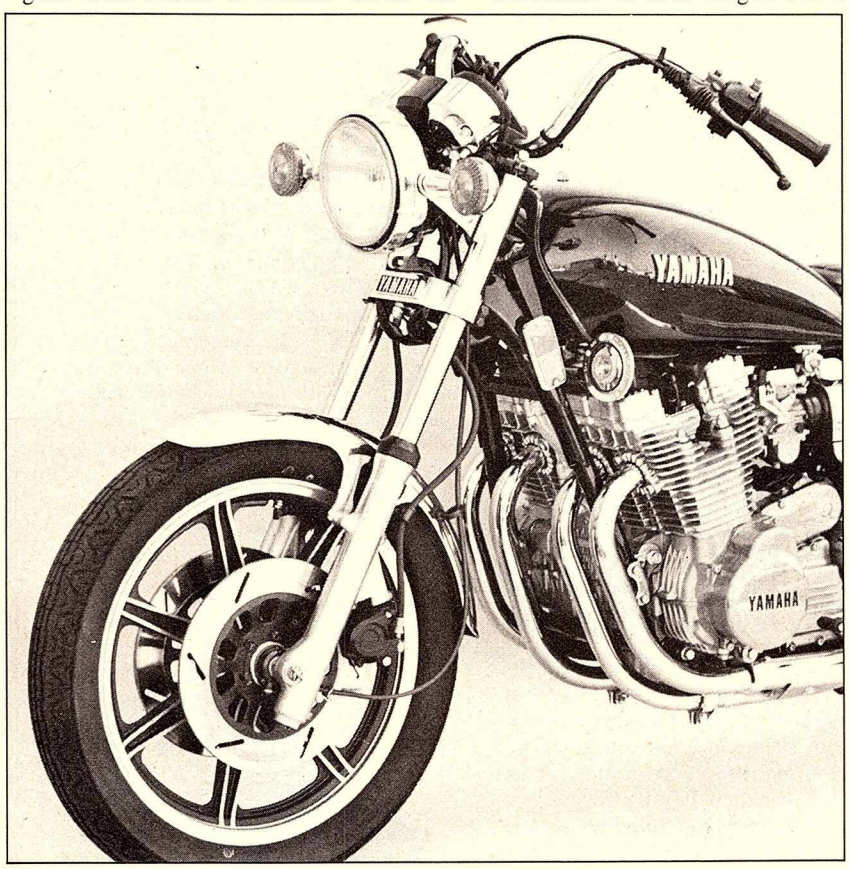
Take the motor, for instance. The big dohc inline Four stays essentially the same. Bore and stroke remain 71.5 x 68.6mm. There's still inductive electronic ignition, still with a vacuum advance and with the same settings. The compression ratio has been dropped to 9.0:1; the pistons and head have been changed so the combustion chamber is different, the better to meet more stringent 1980 emission standards. In addition, the intake valve head diameter has been increased from 36mm to 38mm and the exhaust valve size has gone from 31mm to 32mm. Given the same cam timing and profile, that should make for more horsepower, but there's more to it than that. Those four 34mm Mikuni constant vacuum carbs are jetted differently this year. There's no adjustment on the pilot jet. The needle jet is held in the leanest position. Main jets, which were a #137.5 in all carbs previously are now a #115 in carbs two and three and a #120 in the end carbs.

No longer is there a kick starter shaft sprouting from the right side of the Eleven's five-speed transmission. Now there's a seal covering the hole. The Hy-Vo primary drive chain is the same and so are the gear ratios and the final drive. Because the 16-in. rear tire of the Special has a smaller outside diameter than the 17-in. tire of the standard Eleven, the road speeds in the gears are noticeably lower.

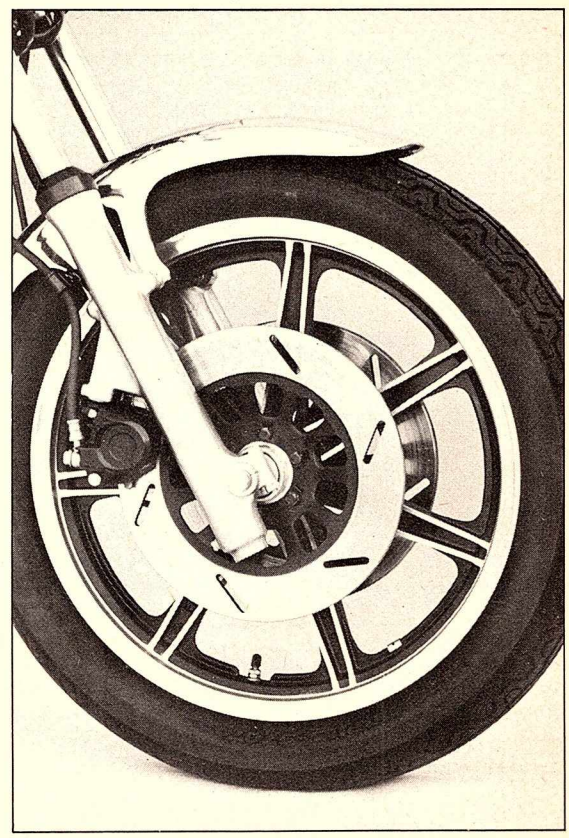
Most of the changes that make the 1980 Special different from the 1979 Special could be called cosmetic. Rather than have a chromed tubular grab bar behind the seat, the new Special has a cast aluminum rail extending around behind the revised seat. Under the rear of the rail is a new taillamp tucked in tightly behind the seat. The rider's portion of the stepped seat is supposed to be two-thirds of an inch lower in 1980, but we measured a full inch difference in seat height between last year's Special and this year's test bike, at a figure of 31 in. Oh yes, that taillight didn't include the license plate light, which is now located at the end of the rear fender where the license will hang.

Second most noticeable change to the Special concerns the new brake discs. Last year there were triple solid discs. The fad has been to have drilled discs, supposedly to improve wet weather braking, and remove grit from the pads to reduce disc grooving, though it never seemed to make any difference. This year the hot set-up is to have the drilled holes placed in an irregular pattern or at a curve or an angle. The Eleven Special has slots, not holes. And the slots don't radiate directly out from the center of the hub, but slant out across the discs, all three of them.

Other changes include the two chromed horns sticking out from each side of the engine, the one on the left being the low tone and the horn on the right being the high tone. Combined, they're loud and noticeable, both in terms of sound output and visual impact. Also, there's a flashing warning light switch on the left handlebar switch that flashes all the signal lights together when it's on. Side reflectors are moved about and the footpegs are larger this year. And don't forget the 85 mph maximum speedometer that's every bit as



Forks use coil springs assisted by air pressure. Even at highest recommended pressures the forks are soft, due to light damping, for a cushy ride.



Slots are in for 1980. Several of the new motorcycles are using slots drilled in brake discs to keep the pads clean and reduce unsprung weight.

Photos by John Ulrich

Subtle Refinements Prepare Yamaha's Eleven for 1980

silly on the Eleven as it is on any other 130 mph motorcycle.

Some things on the Eleven haven't been changed. The original Eleven had a supple suspension that was high on comfort, but made the machine wallow when it was loaded. Last year's Special introduced a revised suspension with air assisted leading axle forks and adjustable damping shocks. The forks and shocks aren't changed on the 1980 Eleven Special. The Special still has short mufflers, nicely tucked in and reasonably quiet. There's the same 4 gal. gas tank with the same sparkly black paint and the same locking hinged gas cap on it. The instruments, aside from the 85 mph speedometer, are the same and so are the instrument lights including the low gas warning light. The stepped seat on the Special, unlike most stepped seats, is surprisingly comfortable for either one or two riders. The wide footpegs make a comfy platform, almost like floorboards, while folding for spirited cornering and not transmitting vibration.

Then there's the suspension. It's as good a touring bike suspension as has ever been offered. But it's on the wrong bike. Most companies that sell touring equipment don't offer equipment for Specials. We've had a 750 Special around the office for nearly a year now and the biggest problem we've had is finding accessories to fit it. The whiz-bang suspension should be on the standard Eleven. The air-assisted forks soak up bumps big and small while controlling the front half of the bike's 584 lb. weight. For normal riding the minimum 6 p.s.i. air pressure is fine. The only uses for which higher pressure would be needed would be if a heavy fairing were mounted or the bike were to be used for serious speeding on winding roads. Neither use is encouraged by the Special's styling. Rear suspension adjustment is much the same. For normal use the minimum damping gives the best ride, while the stiffer damping settings enable the Eleven to remain stable with heavier loads or when ridden faster.

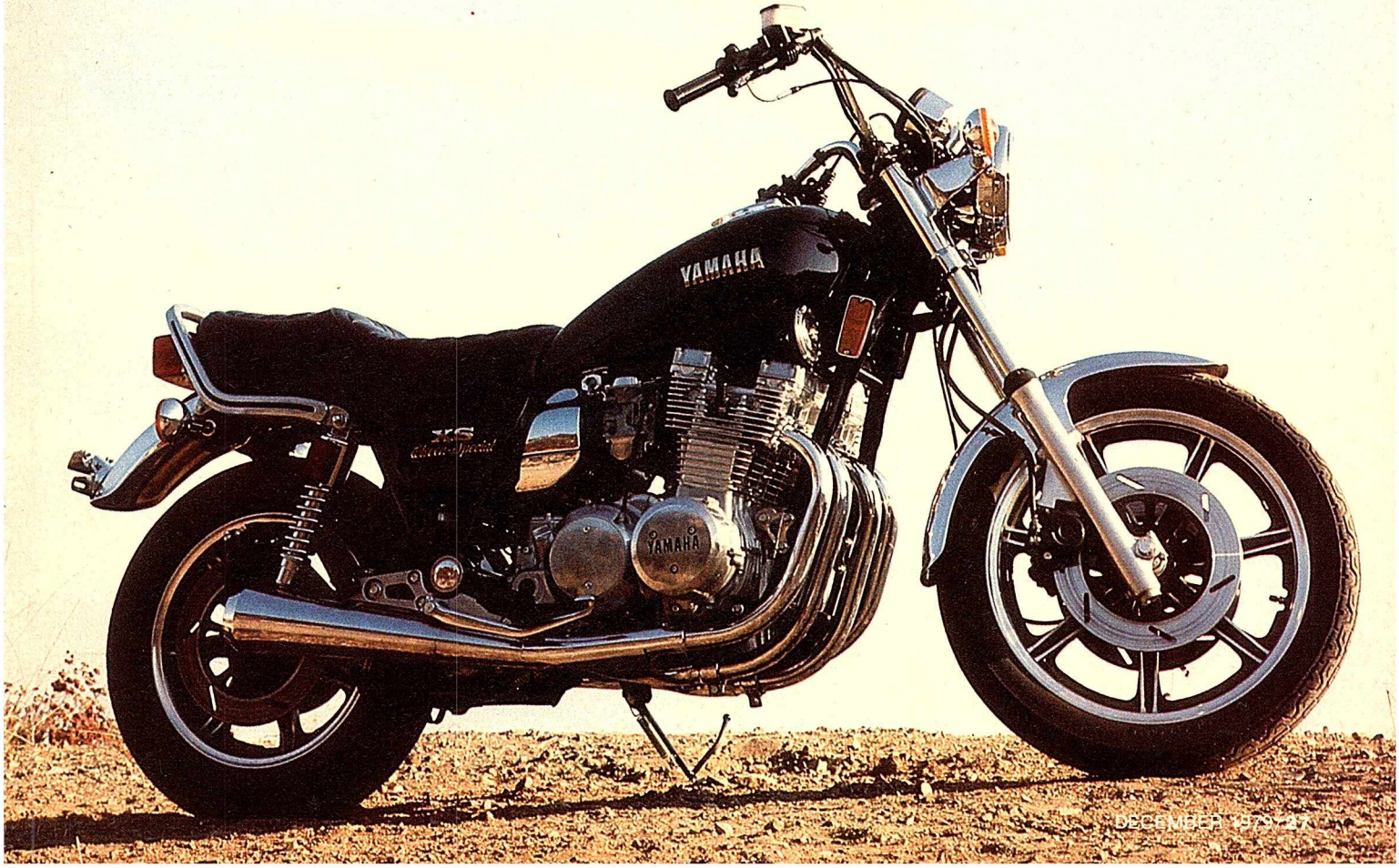
What the owner needs to know, though, is that one man's settings are another man's discomfort. The touring rider dials in control for full pack and the weekend cruiser comes back and says Hey, this bike is oversprung and overdamped.

And it was, for that application. What each rider must do is tune to suit himself and the conditions of the moment.

The combination of beefy shocks, 16-in. rear tire and a reduction in weight from the standard Eleven gives the Special the highest load carrying capacity of any motorcycle *Cycle World* has tested. Cleaner styling means less gingerbread which means less weight. About 20 lb. less weight than the standard Eleven at 584 lb., the Eleven Special is lighter, for instance, than the Suzuki GS850. It's well over 100 lb. lighter than the Kawasaki KZ1300. With a half tank of fuel, the Special has a load capacity of over 500 lb.

Even with this year's engine changes, the Eleven is an enormously strong motorcycle. Originally Yamaha claimed the Eleven had 95 horsepower. Now, it's probably under 90 bhp. Quarter mile times aren't in the 11's anymore. Trap speed is down 4 mph from the original Eleven. What the engine has gained with the bigger valves it has lost with the leaner jetting. Of course a power hungry owner could change carb jetting without much difficulty. The changes, in some states, would violate state air pollution tampering rules, but the raw material is still there.

Engine performance has suffered in other ways than straight horsepower, too. In order to start the Special from cold the choke has to be full on and the throttle cracked a quarter of a turn. Our test bike wouldn't start with just the choke pulled out when cold. The bike then has to run for several minutes with the choke on. Usually the choke would be left full on for a mile then pushed halfway in for another mile>

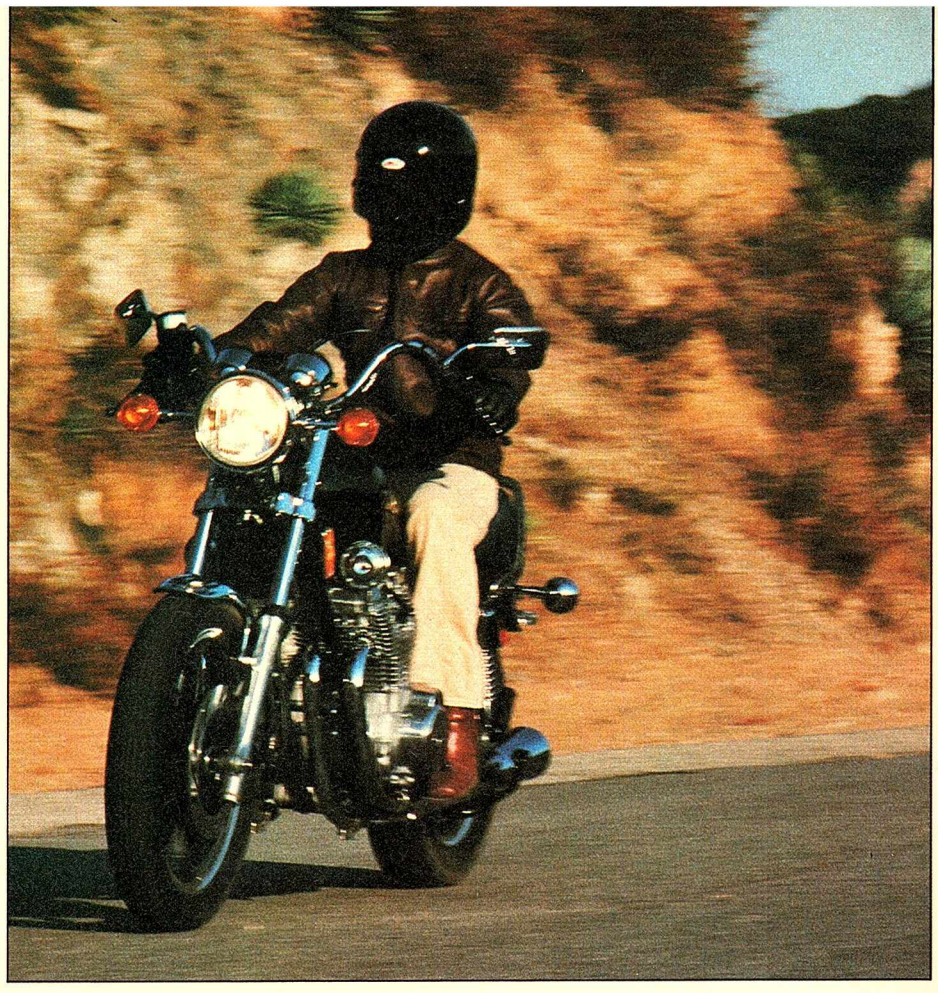


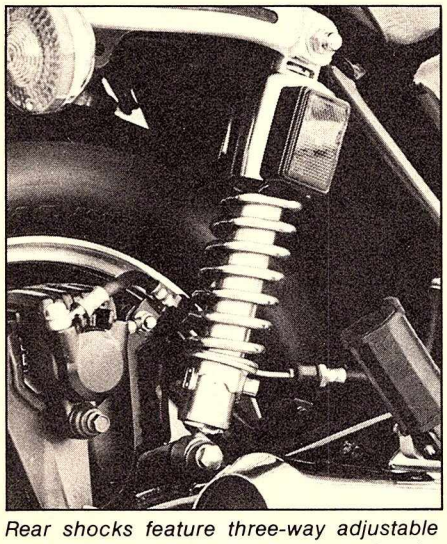
and finally it would run, sort of, without choke. Still, there was a hesitation just off idle that was annoying and required revving the big motor excessively just to get rolling from a stop.

A quarter mile time of 12.15 sec. at 109.48 mph is no slouch. It's just that we expect new motorcycles to be faster than last year's model. That is, until exhaust emission standards came about. Fortunately the emission standards have reached their most stringent level in 1980. There are no plans for tighter restrictions next year or the year after, on motorcycles, so maybe next year's Yamaha can once again run better as the engineers learn more about the motors.

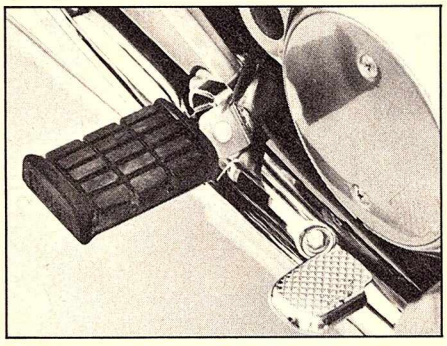
Those stylish slashes in the brake rotors haven't hurt the Eleven's stopping ability. With distances of 33 ft. to stop from 30 mph and 134 ft. from 60 mph, the Eleven's brakes are powerful enough. However when the discs heated up the front brakes could lock unpredictably during maximum use. Whether the brakes work better in wet weather or not is unknown due to a lack of rain when the bike was tested. Yamaha's solid discs used in 1979 worked better than average in wet weather stopping with little drying-out time needed.

Staff comments were divided on several of the Special's special features. Some testers feel the emergency flashers are a worthwhile safety device while others have no use for them. Some like the self-cancel-

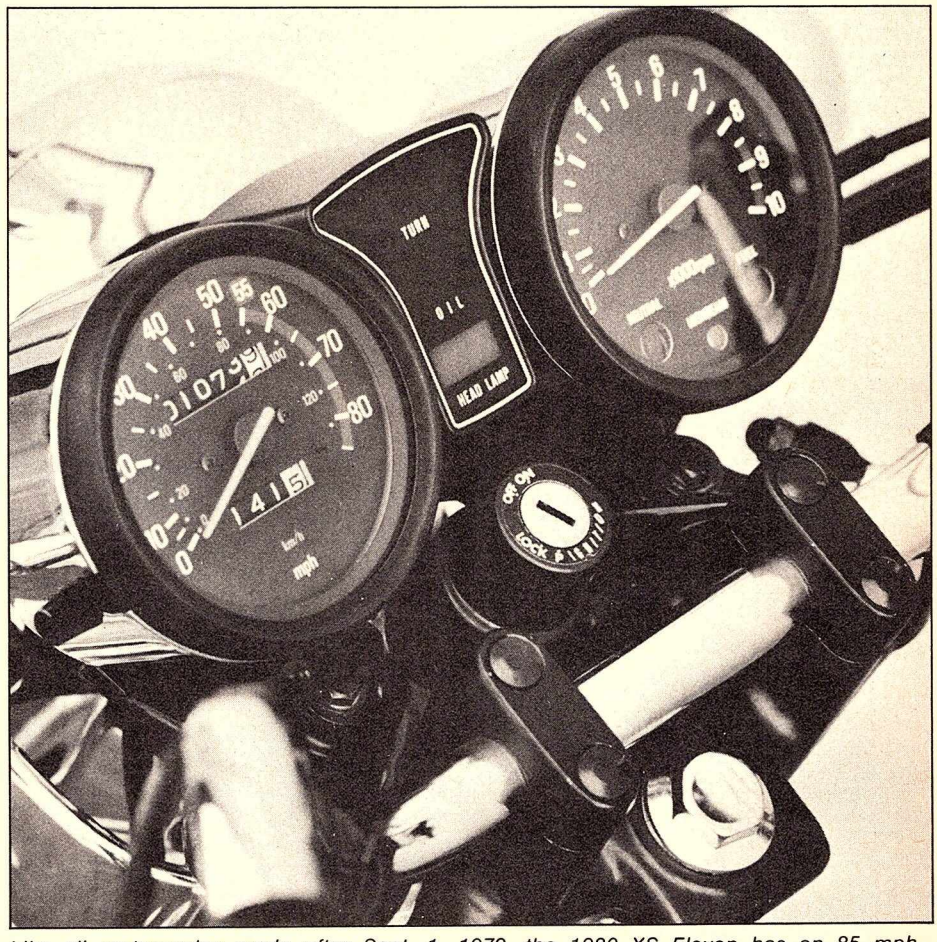




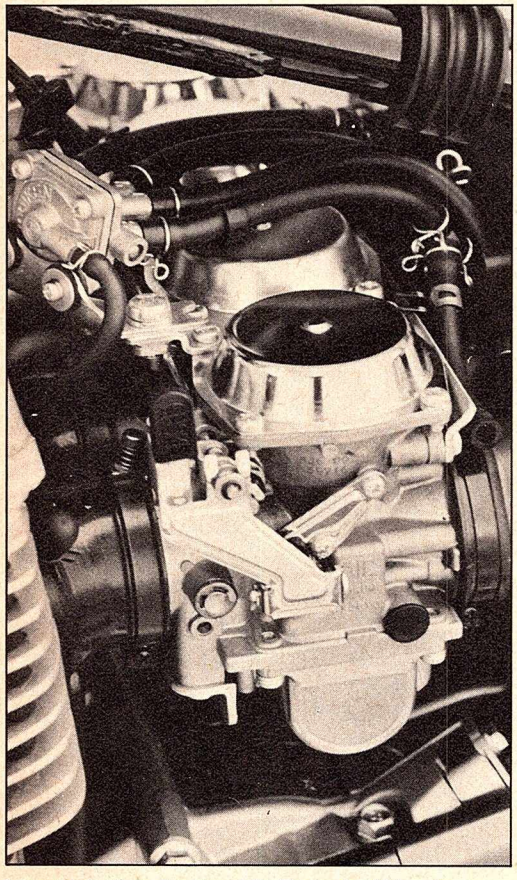
Rear shocks feature three-way adjustable damping and five preload settings for the springs.



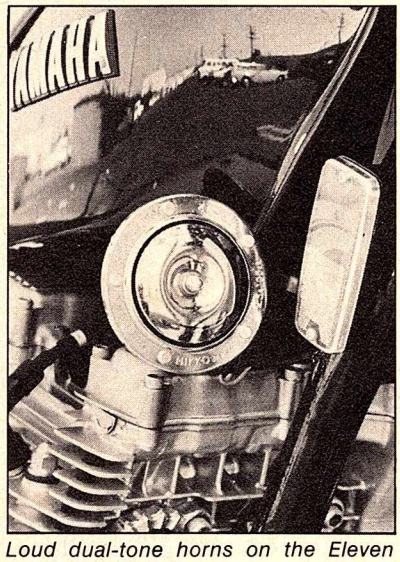
Footpegs on the 1980 Eleven are wider, but have little effect on comfort.



Like all motorcycles made after Sept. 1, 1979, the 1980 XS Eleven has an 85 mph speedometer.



Leaner jetting in the XS Eleven's Mikuni carbs makes the machine more cold blooded and takes away horsepower for 1980.



Loud dual-tone horns on the Eleven are easily noticed.

Yamaha's Specials for 1980 get an aluminum grab rail and separate taillight and license plate light.

ing turn signals and the low fuel warning light, others don't. The Eleven, in either standard or Special trim is not a machine for the spartan. Yamaha makes the 650 Twin for people who like kick starters and vibration. The Eleven is for those who appreciate all the sophistication a motorcycle can offer.

The Eleven's motor is as smooth as any Six. Its sheer size and state of tune give a rider tire-destroying power at any engine speed over 3000 rpm. The clutch pull is lighter than the clutch on Yamaha's own 750. The transmission, which shifts with a loud clank, is positive, but needs firm shifts from strong boots. In designing the Eleven, Yamaha didn't get carried away with technical overkill. Yes, there are dual overhead cams and an inductive electronic ignition, but these things aren't complications to the rider. Basic maintenance on the Eleven consists of changing oil and sparkplugs. It's not liquid cooled and the plugs can be easily changed without removing the gas tank. The eight valves are set with shims and adjusting the valves requires a stock of shims and a valve spring compressor tool, not usually part of the home mechanic's tool chest. Because of the Eleven's shaft drive, it hasn't been used extensively in competition, but the motor is proven bulletproof. Jim Bernard just rode the XS11-based Ron Teson/R.C. Engineering Top Fuel dragster—which uses a stock Yamaha crankshaft and main bearings in its supercharged engine—to a new E.T. record with a 7.57 sec. at 184.95 mph pass at Indianapolis.

For stock XS11s, the clutch is probably the weakest link of the machine. After half a dozen runs at the dragstrip the clutch in the test bike was slipping too much to continue testing. When it cooled off and was adjusted, it returned to normal performance.

Going into its third year, the biggest Yamaha is wearing well. It's still the best touring machine we've seen. It's still a magnificent motorcycle. Unfortunately, it's not better than the original XS Eleven. Performance is down. In day-to-day operation the machine is less convenient to use due to its state of tune. The Special has added a refined suspension, but the real merits of the suspension can't be used because the Special doesn't lend itself to either sport or touring use.

Finally, there's styling. The Special is a good looking motorcycle. It's clean and everything is shaped just right. But again, this year's Special isn't as good looking as last year's Special. The separate tail and license plate lights detract from the clean styling. The cast aluminum grab bar around the seat is attractive, but the entire machine, with more chrome and bigger reflectors on the side, looks ever so slightly more gaudy than the original Special.

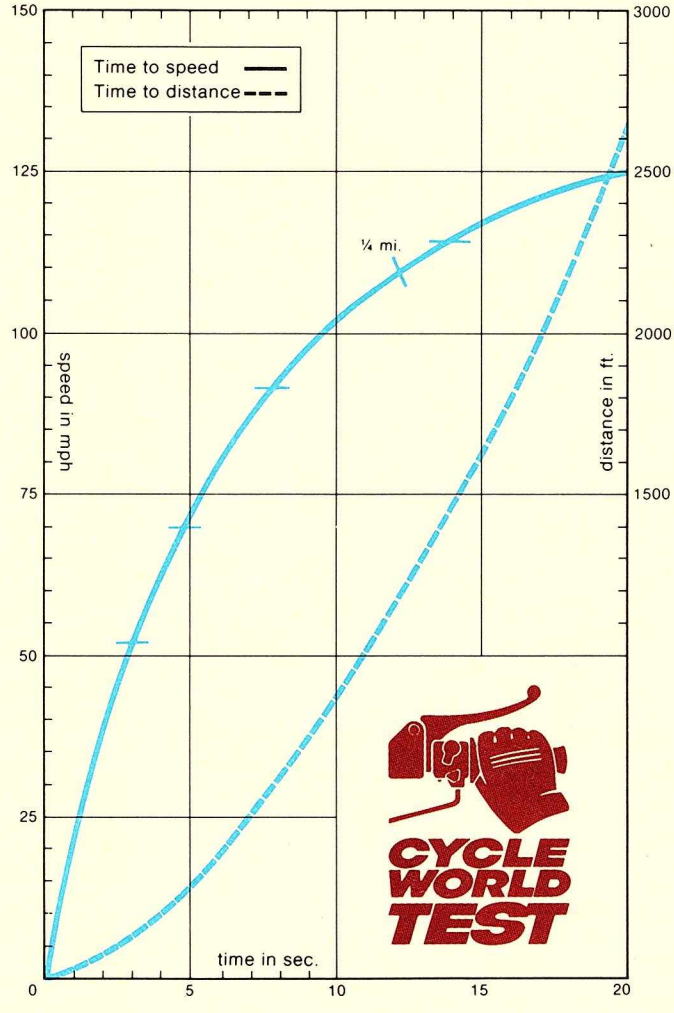
Maybe when the Specials *are* the standard models, Yamaha can reinvent the Special and introduce new, simpler styling with less excess. ◘

YAMAHA XS1100 SPECIAL

SPECIFICATIONS

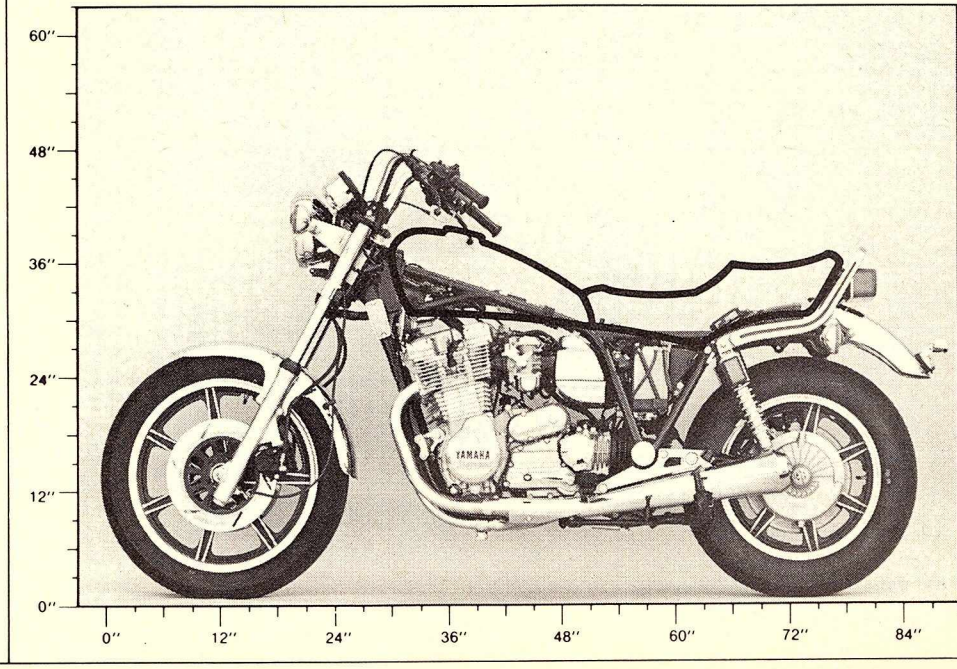
List price ..... na
Engine ..... dohc inline Four
Bore x stroke ..... 71.5 x 68.6mm
Displacement 1101cc
Compression ratio 9.0:1
Carburetion ..... (4) 34mm Mikuni CV
Air filtration ..... dry foam
Ignition ..... pointless electronic, vacuum advance
Claimed power ..... na
Claimed torque ..... na
Lubrication system ..... wet sump
Oil capacity ..... 4.3 qt.
Fuel capacity ..... 4.0 gal.
Recommended fuel ..... unleaded
Starter ..... electric
Alternator 12v325w
Headlight ..... 55/60w halogen
Clutch ..... multi-disc wet
Primary drive ..... Hy-vo chain
Final drive ..... and gears shaft, bevel gears
Gear ratios, overall:1
5th 4.76
4th 5.57
3rd 6.94
2nd 8.78
1st 12.08
Front suspension ..... telescopic fork with air and oil spring
travel ..... 6.5 in.
Rear suspension ..... adjustable damping, swing arm
travel ..... 3.25 in.
Front tire ..... 3.50H-19 Bridgestone Mag-Mopus
Rear tire ..... 130/90-16 Bridgestone Mag-Mopus
Front brake ..... dual 11.7 in. disc
Rear brake ..... 11.7 in. disc
Total brake swept area ..... 295 sq. in.
Brake loading (160-lb. rider) ..... 1.88 lb./sq. in.
Wheelbase ..... 61.25 in.
Fork rake angle ..... 29.5°
Trail ..... 5.1 in.
Handlebar width ..... 29 in.
Seat height ..... 31 in.
Seat width ..... 12 in.
Footpeg height ..... 11.5 in.
Ground clearance ..... 5.9 in.
Test weight (w/half-tank fuel) ..... 583 lb.
Weight bias, front/rear, percent 46.5/53.5
Gross vehicle weight rating ..... 1090 lb.
Load capacity ..... 507 lb.

ACCELERATION



PERFORMANCE

Engine speed @ 60 mph ..... 3942 rpm
Power/weight ratio (160-lb. rider) ..... na
Fuel consumption ..... 42 mpg
Speedometer error:
30 mph indicated ..... 30 mph
60 mph indicated ..... 62 mph
Braking distance
from 30 mph ..... 33 ft.
from 60 mph ..... 134 ft.
Standing start ¼-mile ..... 12.15 sec. @ 109.48 mph
Speed after ½ mile ..... 127 mph
Maximum speed in gears
1st ..... 51 mph
2nd ..... 70 mph
3rd ..... 89 mph
4th ..... 111 mph
5th ..... 129 mph
Acceleration
0–30 ..... 1.6 sec.
0–40 ..... 2.2 sec.
0–50 ..... 3.0 sec.
0–60 ..... 4.1 sec.
0–70 ..... 5.2 sec.
0–80 ..... 6.3 sec.
0–90 ..... 7.6 sec.
0–100 ..... 9.3 sec.



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There's a reason so many sports car enthusiasts who own a truck, own a Toyota SR-5 Sport Truck. It's more than just the presence of a 5-speed transmission, or bucket seats. Call it a feeling, the way everything works together. Because "feel" is what sports cars, and the SR-5, are all about.

You'll know what we mean the moment you start the 2.2 liter engine. It pulls hard, yet the 5-speed shifts into gear with a light, precise feel many genuine sports cars can't match.

The standard power assisted front disc brakes snug the SR-5 to a clean stop, but there's hardly a pip from the tight, all-welded cab. And the standard AM/FM stereo radio, full carpeting, and blacked-out instrument faces enhance the sporty atmosphere inside.

Everything working in harmony—that's the feeling the Toyota SR-5 Sport Truck shares with good sports cars. *PICKUP, VAN & 4WD* Magazine got the feeling. They put it this way, "...this is how a small truck built by BMW would drive and feel if BMW built small trucks."

THE SR-5 SPORT TRUCK. THE SPORTS CAR OF TRUCKS.

NOBODY WANTS A NECKTIE FOR CHRISTMAS.

Somebody wants to buy you a nice regimental necktie or a bottle of aftershave? Send them to your Harley-Davidson® dealer. Because this year we're out to save your neck . . . and maybe Santa's too. Consider this ad the most direct route to a very Merry Christmas. A clear separation of gifts you've been getting from gifts you want.

Suggest they browse the leathers department. Nowhere else could they find *our* quality motorcycle leathers. All designed with both function and class so they work hard while you look good. For example: Soft and comfortable come together in the rugged look of the genuine leather chaps and vest you see featured to your right. Also to your right, our legendary Cycle Champ and Chestnut Brown leather jackets. They're premium cowhide with windflaps, buckles and collar snaps precisely where you need them. This is only a mere smattering of what awaits them at your Harley-Davidson dealer.

Maybe you're even thinking of surprising your bike with a little something. We have a choice of several cast wheels, light bars, sissy bars and a large variety of chrome goodies that will make your bike stand out like that famous reindeer with the red nose.

Now, take a look at the custom 2-tone cut and sewn seat. The black and gray you see perched here is only one of many styles and colors.

And don't forget to *give* the kind of gifts you enjoy *getting:* Like Harley-Davidson belt buckles, jewelry or Denim Cyclewear including shirts, jeans and vests sporting the familiar bar and shield. So, get your scissors, cut out this ad and make it a very Merry Christmas . . . *your* way.

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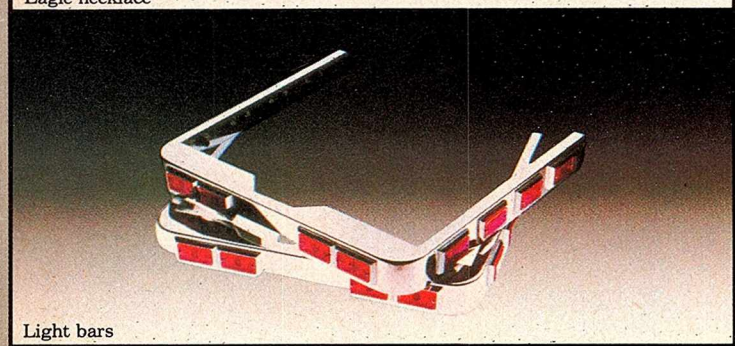
Pick up the complete parts and accessories catalog at your local Harley-Davidson dealer.
We support the Motorcycle Safety Foundation and the A.M.A. Always ride with lights and a helmet.

Leather chaps
and vest

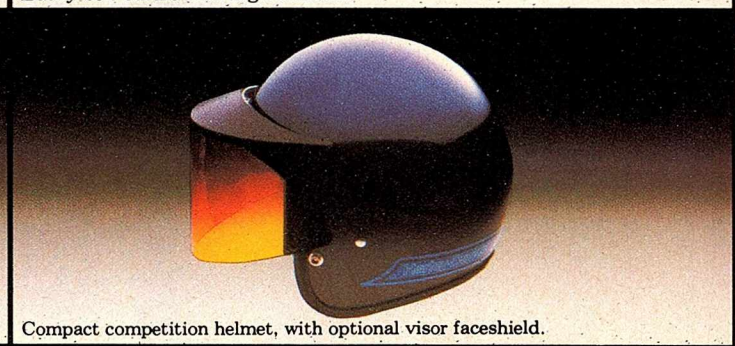
Denim cycle wear

Eagle necklace

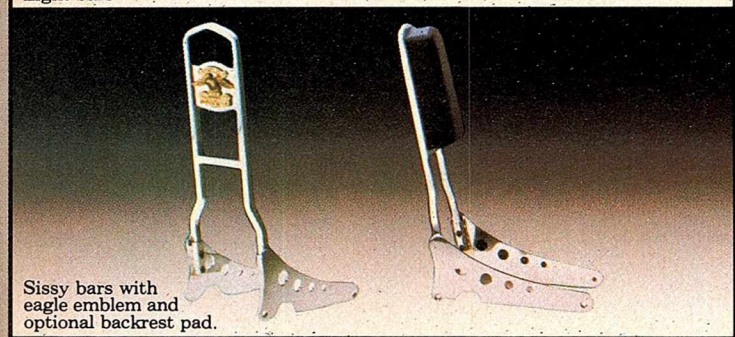
Ebony belt buckle with eagle emblem.



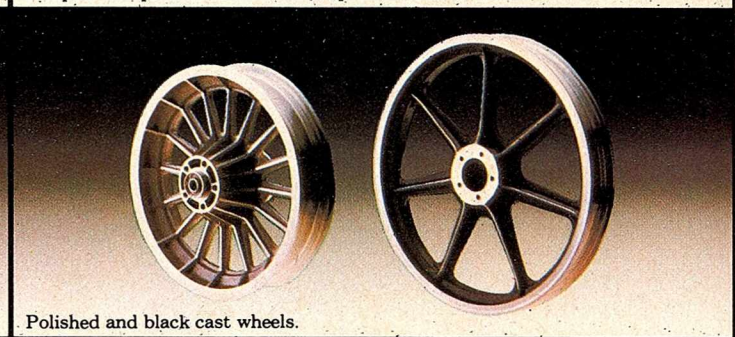
Light bars



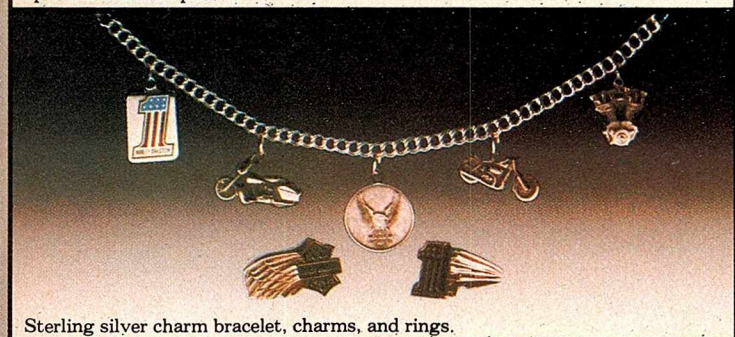
Compact competition helmet, with optional visor faceshield.



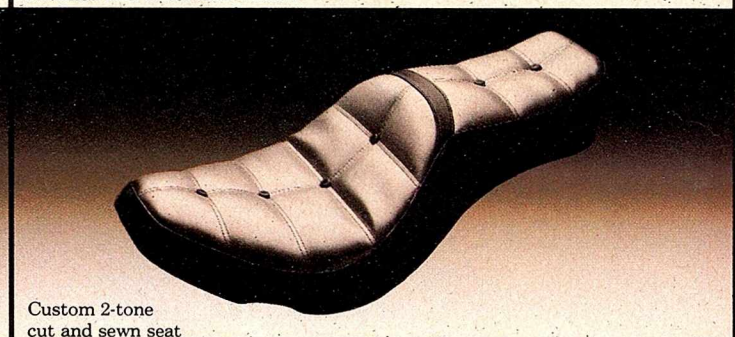
Sissy bars with
eagle emblem and
optional backrest pad.



Polished and black cast wheels.



Sterling silver charm bracelet, charms, and rings.



Custom 2-tone
cut and sewn seat

Black riding leathers.

Cycle Champ
and
Chestnut
Brown
leather
jackets.

41 Knobby Tires Compared on the Track and the Trail.

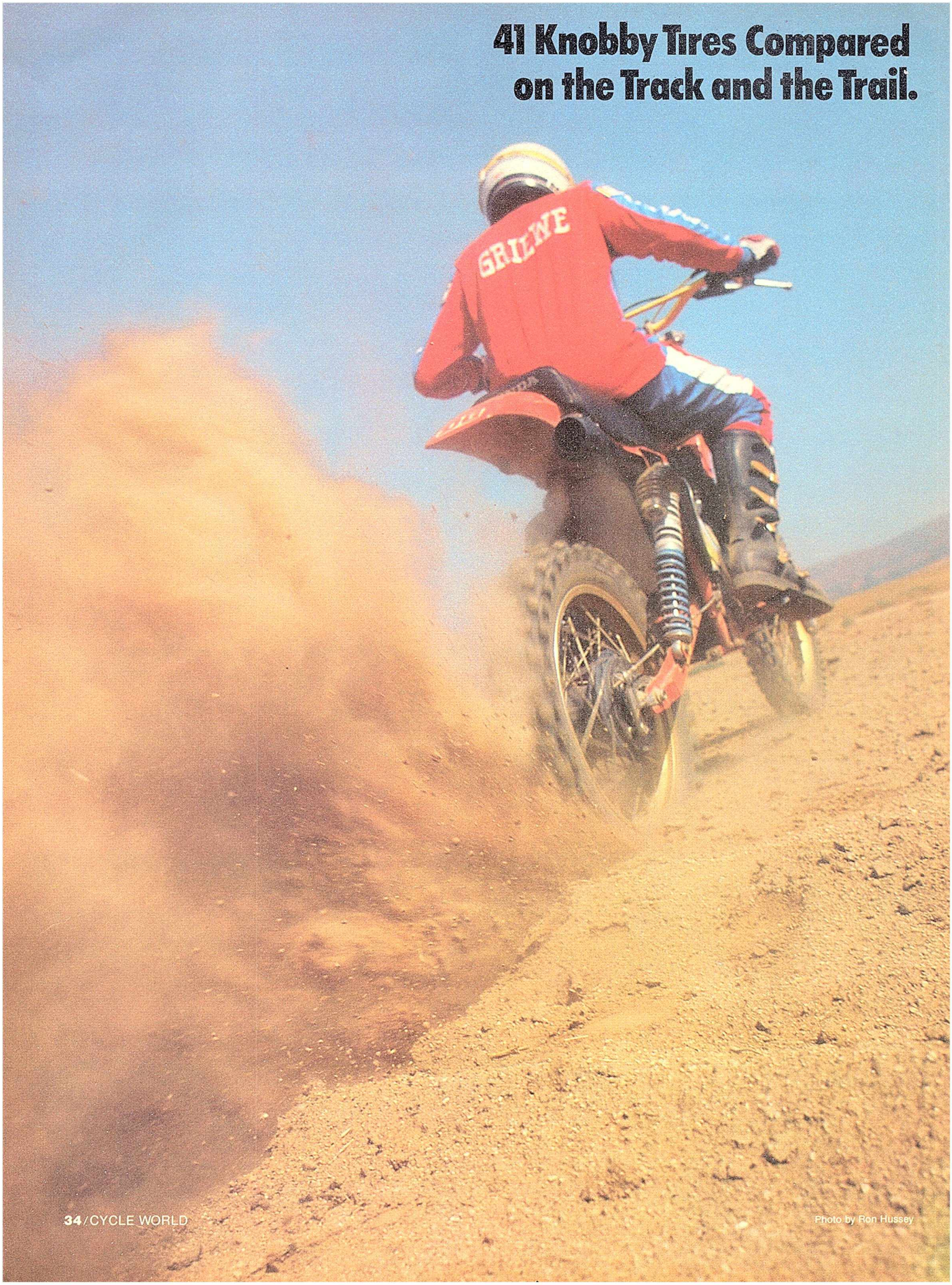
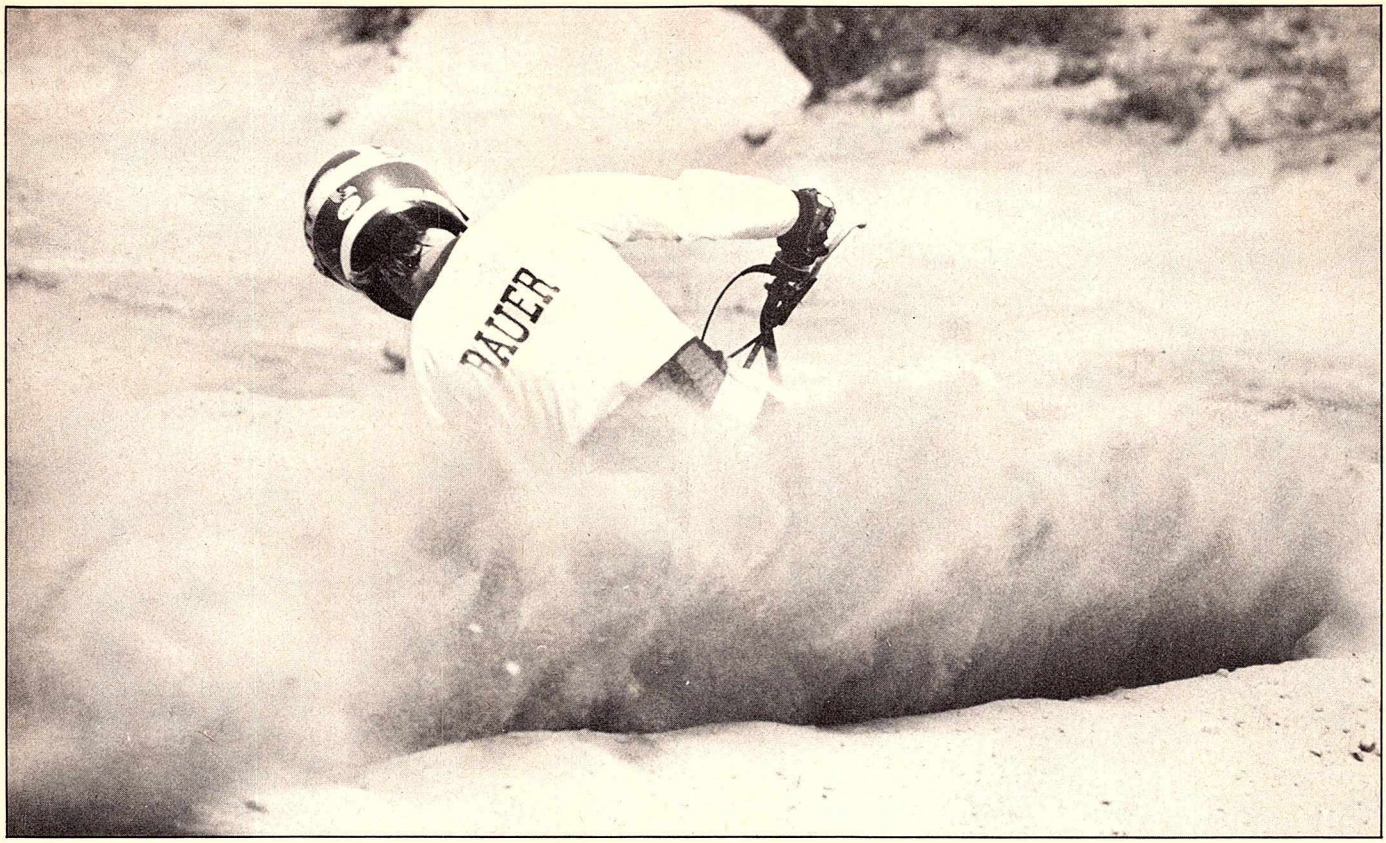


Photo by Ron Hussey



Knobby Tire Comparison Test

At the beginning of this project, a comparison test of knobby tires, we approached every major tire manufacturer with two requests.

First, we told them about the project and asked for tires.

Second, we expressed concern about conducting scientific tests on a wide variety of surfaces, and we asked for advice. How do they test off-road tires and would it be all right if we used their tests?

The first part was easy. The companies shipped all the samples we could use.

The second part was a surprise.

There are no scientific tests for off-road tires. What the manufacturers do is establish some basic guidelines, construct tires with carcass and tread that seem as if they'd work, install them on a motocross or enduro bike and send experts off to the races. If the tires win, or if the riders like the tires, they go into production.

This news was also something of a relief, as we'd been wrestling for months with the problem of devising scientific measurements for knobbies. If the tire companies can't do it in the lab either, we reasoned, then we haven't failed if we base our findings on some timed tests, some lap times and some pure seat-of-the-pants conclusions.

Which is just about what we did.

Before we get into that, though, some notes of caution.

Most visible is that the following tests and results are for dry conditions only. To be valid, comparison tests must be repeatable. There was no way we could artificially produce enough mud to run mud tests. Instead, we'll rely on nature. Several months from now, when our testing areas have been rained on, we'll report further.

Next, normal disclaimers. We asked for knobby tires, to be used on middleweight bikes, for enduro and motocross. We used Yamaha YZ and IT models, for reasons to be explained in a moment, and we settled on one tire pressure for all the tires, no matter which test or track. Because this is a test of tires, all other factors were kept as constant as possible.

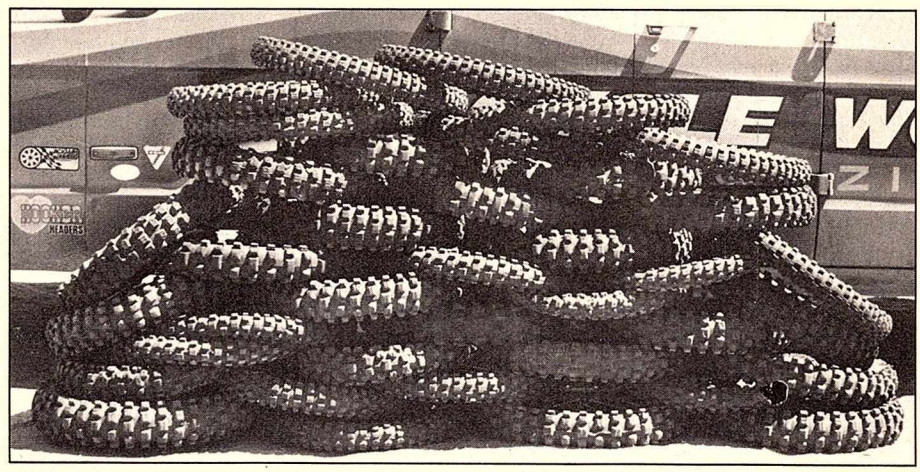
Finally, times for each model tire were given for the timed tests, while the results of the other tests are listed in group, rather than numerically. Again, a matter of fair play. When we had no hard numbers, it didn't seem right to rank one tire as the best and another as the worst.

Okay, why don't the tire companies have lab tests? Why are their (and our) investigations done mostly subjectively?

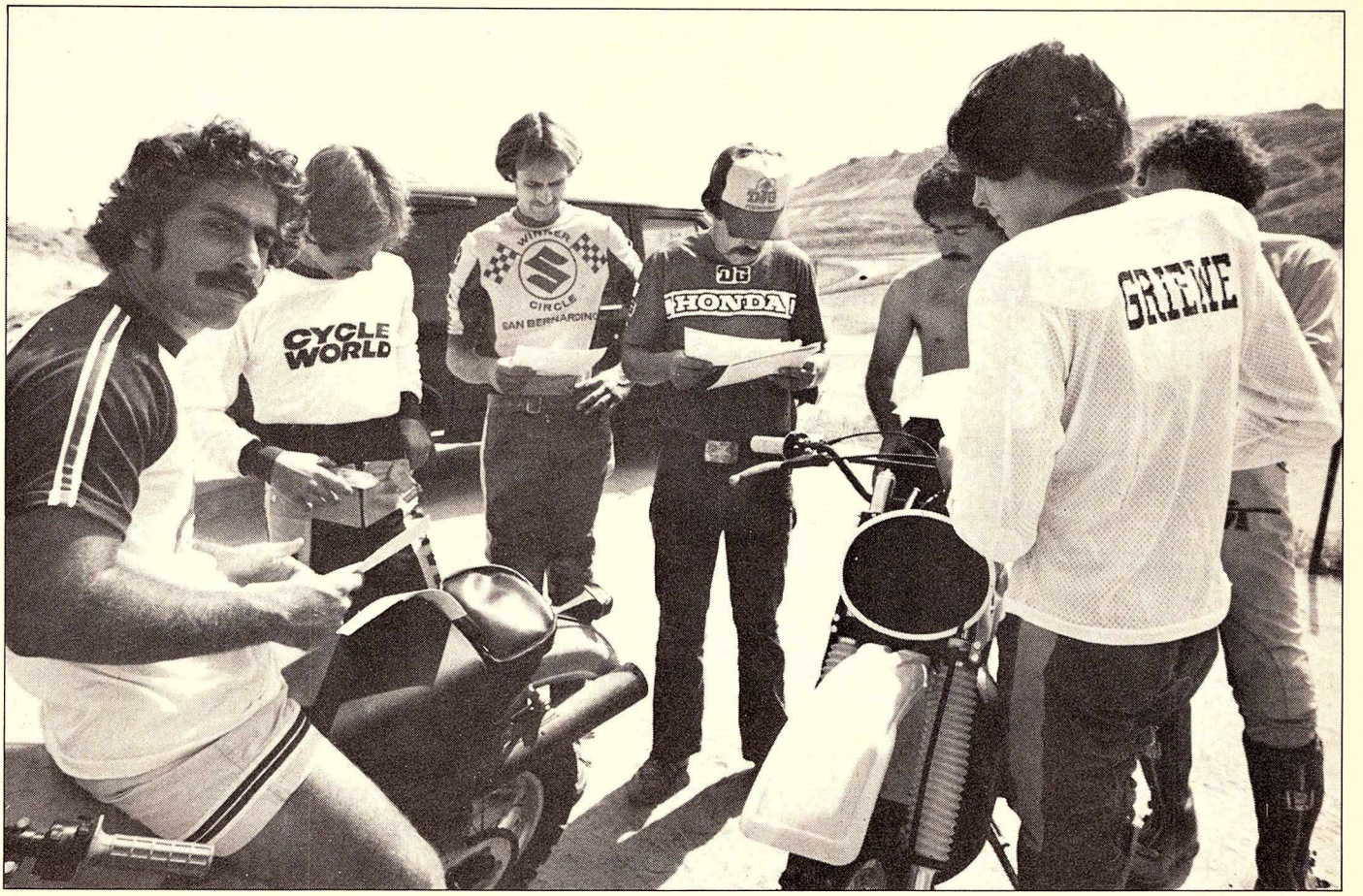
Because no two off-pavement surfaces are alike. Asphalt and concrete vary, but not by much. A blacktop road is a blacktop road.

But dirt is different. Midwest loam isn't New Jersey sand, or red Georgia clay or desert adobe. East Coast sand isn't like West Coast sand, etc.

To a man, the tire engineers said it isn't>



Anyone for a stack of used tires?



The tire test crew gets instructions.

possible to design a knobby tire that's best for all surfaces.

Instead, their goal is to design either a tire that works well—not perfectly—on all surfaces, or to offer a choice of tire for mud, sand, rock or dirt.

These men know their business. They're also human, as are the test riders, so what we got when we collected all 41 tires was an assortment of practical decisions, the results of 14 engineering departments balancing grip against wear, sand against mud, flexibility against strength.

A good tire depends on the success of two elements: the carcass and the tread.

The tread is visible and one can draw some primary conclusions from looking at competing models. Most knobbies use alternating rows, four knobs, five knobs, etc. Most of the current tires are nearly square in cross-section, with high side knobs that don't wrap around to the sidewall. The newer designs have patterns on the knobs, in the form of wavy lines, straight lines, cross hatching or dimples, the theory being that it's the edges that grip the surface so the more edges you have, the more grip you get.

There are differences between tires designed for solid dirt and tires designed for looser surfaces. Best example here is the Dunlop K190, an all-round design, and the Dunlop K88HT, built for hard terrain. The 190 has dimples on large blocks spaced apart, the HT has flat-topped knobs, smaller and placed closer together.

Tire engineers say there are also different patterns for sand and mud. Blocks for a mud tire should be staggered, they say, with the rows overlapping so the tread gears into the mud rather than letting the mud slide past. Sand tires should have a clear path between knobs, because the bike runs *through* sand.

The charts show variation in knob height. Another trade-off. As a general rule, taller knobs work in sand while flexing too much for best performance on hardpack.

Carcass design is less easy to test. All the tires in this group are cross-ply construction, with tube. Some use nylon cords and some have rayon, and most are either four-ply or four-ply rated, based on standards for weight capacity. The compound, the rubber-substitute material used for carcass and tread, is a chemical mix. We cannot analyze them, but we did check each with a durometer, to determine relative rubber hardness.

The tires in this group are the same general sizes, but as the measurements show, they differ in tread width, section height and diameter.

The dimensions determine what the engineers call displaced volume, the space contained by the tire.

There is variation in volume, and in sidewall stiffness, aspect ratio and so forth, which is why two tires will react differently with identical air pressure.

Point here is, carcass is as important as tread, while being as different and much harder to evaluate.

Our tests were laid out to include as many conditions, that is, different surfaces, as possible. We used three Yamaha YZ250s and one IT400. This combination was picked because the bikes are popular and because we could swap wheels among them. (The IT was needed by virtue of its odometer and speedometer.)

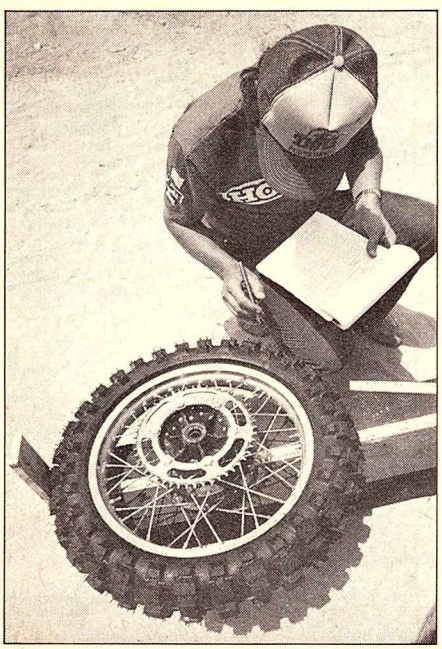
Modifications to the bikes were minor: a

Each tire was measured after it was mounted.

Hard ground mx course testing.

calibrated VDO speedometer went on the IT and the final gearing was changed to match the motocrossers. Suspensions were adjusted to the same on all of the machines and our pro motocrossers suggested using 12 psi of air pressure in both front and rear tires throughout the test.

Saddleback Park was chosen for the test site. The main motocross course was used for the hard ground MX test, and a sand MX course was laid out in a large sand trap at the back of the park. The two courses were tied together with trails, to furnish a trail impression. We used Saddleback's flat track as a test. Not that anyone buys knobby tires for flat track use, but a flat track does simulate fire roading. We also used the center of the flat track for our acceleration and braking tests. Two pro motocrossers, Steve Bauer and Don Griewe, rode for the input from each MX track and the flat track. An expert desert rider, Bill Wolf, rode the IT during the acceleration and braking tests.



The testing was conducted in the following order: Both pro motocrossers raced around Saddleback's hard ground MX course for five laps, switched bikes and raced for another five laps. Their impressions were recorded and they hit the trail for the sand track. Five laps on each bike around the sand track and impressions again recorded. Another trail led them back to the flat track and five laps on each machine for each rider. More results recorded and the wheels from the motocrossers removed. The next set of test tires and wheels were then installed on the MX bikes. The wheels removed from the motocrossers were installed in matched pairs on the IT. Acceleration tests were next; a minimum of five runs from dead stop to measured 100-ft. marker. Any run that appeared exceptionally fast and couldn't be closely duplicated was ignored, then the fastest time recorded.

Next came braking. Full-lock stops from an indicated 30mph on the VDO were repeated a minimum of five times. Any stops that were exceptionally short and couldn't be duplicated closely were discarded and the shortest repeatable distance logged.

The double entry below each track test section represents each pro-rider's input. In some cases they agreed, in others they differed quite a bit. We expected differences of opinion—that's the main reason for using two riders instead of one.

Testing the 21 sets of knobbies took over three weeks and Jerry Vucci and Tim Buck are ready to challenge all comers for the world tire changing championship.

CONCLUSIONS

The accompanying charts list the winners of each test starting with first at the top (except for trail impressions). Several ties were encountered, including first place on the hard pack and sand MX courses. We had more ties on the sand MX course than any other test. Either more models work right in sand or the faults aren't as noticeable, we're not sure which.

Because testing was conducted with matched pairs of tires, some brands of tires placed lower than expected. Front tire performance is much more important than rear tire performance on a dirt bike but, strangely, only a few front tires were considered really good. Most of the rear tires would have finished higher in the results if

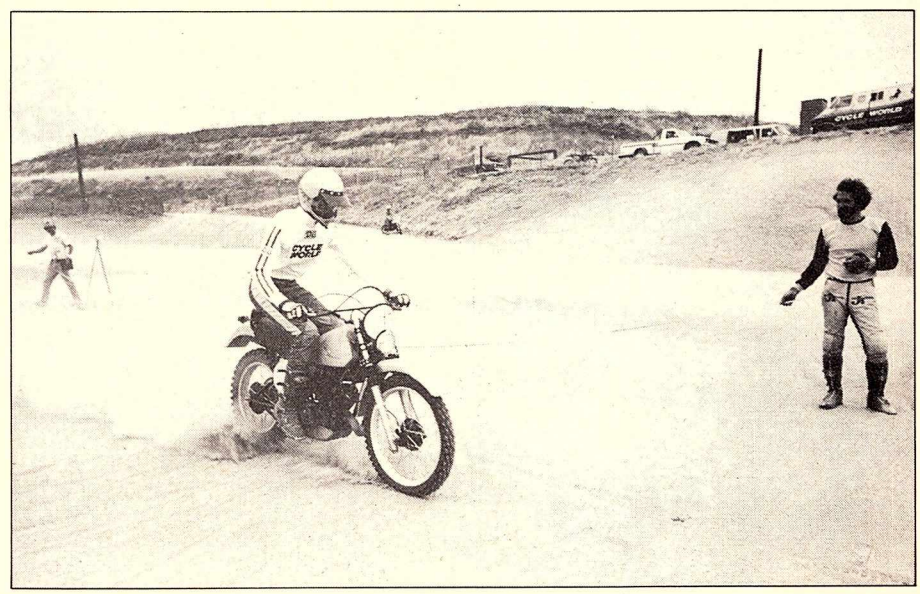
Photos by Dean Koga

Rider input was taken after each test course.

front tire performance had been equal to the rear. A rear tire that slips a little or doesn't quite bite perfectly, but sells for maybe half the price of the perfect rear tire, can be a wise choice for the trail rider or the person on a tight budget, if a really good tire is used on the front. But a marginal rear tire combined with a marginal front could cause an unnecessary fall. A slippery rear tire can easily be compensated for, a skating front tire isn't so easy to allow for and can turn a fun ride into a fear ride. The lesson here is simple: Buy the best possible front tire, regardless of price. Buy the less perfect tire for the rear if your budget is tight or if the tire is on sale. Which front tires did our pro testers prefer? The Pirelli MT16 and MT25, 3.00-21, Metzeler 3.00 and 3.25-21, Hi-Point 3.00-21, and Goodyear MXII, 3.00-21 all did well.

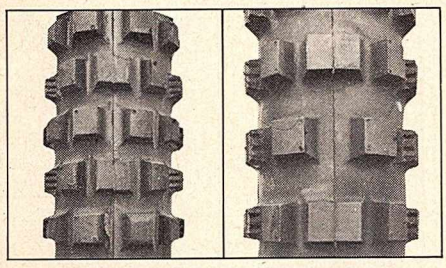
The tires that came out with high ratings on the MX courses were, in many cases, near the middle or bottom of the results in the braking and acceleration tests. The acceleration chart could be misleading if not studied carefully. As an example; the difference between first and seventh place is only .09 sec., meaning the fastest tire is a little over 3 ft. ahead of seventh at the 100-ft. mark.

Results of the braking test were equally close between the first seven places. The biggest difference between any of the positions was between first and second, where a whopping 3.6 ft. separated the two. But second through seventh was separated by less than 2 ft. Control of the motorcycle is as important as quick stops and the first >



Braking tests were from 30 mph.

Flat track action.



BARUM

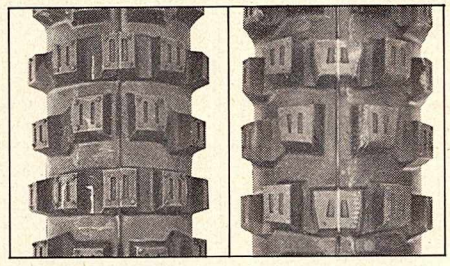
Country of origin .... Czechoslovakia

SPECIFICATIONS—Front Tire

Model	S28 MX
Size	3.25-21
Price	$29.95
Diameter	27.9 in.
Width	3.5 in.
Aspect ratio	99%
Tread depth, center	16/32 in.
Plys/ply rating	4/4
Cord material	nylon
Weight	10.0 lb.
Durometer reading	65

SPECIFICATIONS—Rear Tire

Model	S28 MX Special
Size	4.75-18
Price	$39.95
Diameter	27.25 in.
Width	4.8 in.
Aspect ratio	99%
Tread depth, center	23/32 in.
Plys/ply rating	4/4
Cord material	nylon
Weight	13.5 lb.
Durometer reading	64



BRIDGESTONE

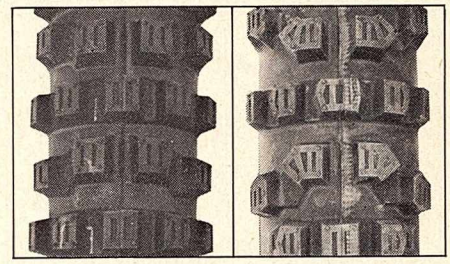
Country of origin ..... Japan

SPECIFICATIONS—Front Tire

Model	M808 Motocross
Size	3.00-21
Price	$28.92
Diameter	27.5 in.
Width	3.4 in.
Aspect ratio	96%
Tread depth, center	16/32 in.
Plys/ply rating	4/4
Cord material	nylon
Weight	9.0 lb.
Durometer reading	68

SPECIFICATIONS—Rear Tire

Model	M18 Motocross
Size	5.10-18
Price	$49.00
Diameter	27.0 in.
Width	4.7 in.
Aspect ratio	96%
Tread depth, center	24/32 in.
Plys/ply rating	4/4
Cord material	nylon
Weight	13.5 lb.
Durometer reading	75



BRIDGESTONE

Country of origin ..... Japan

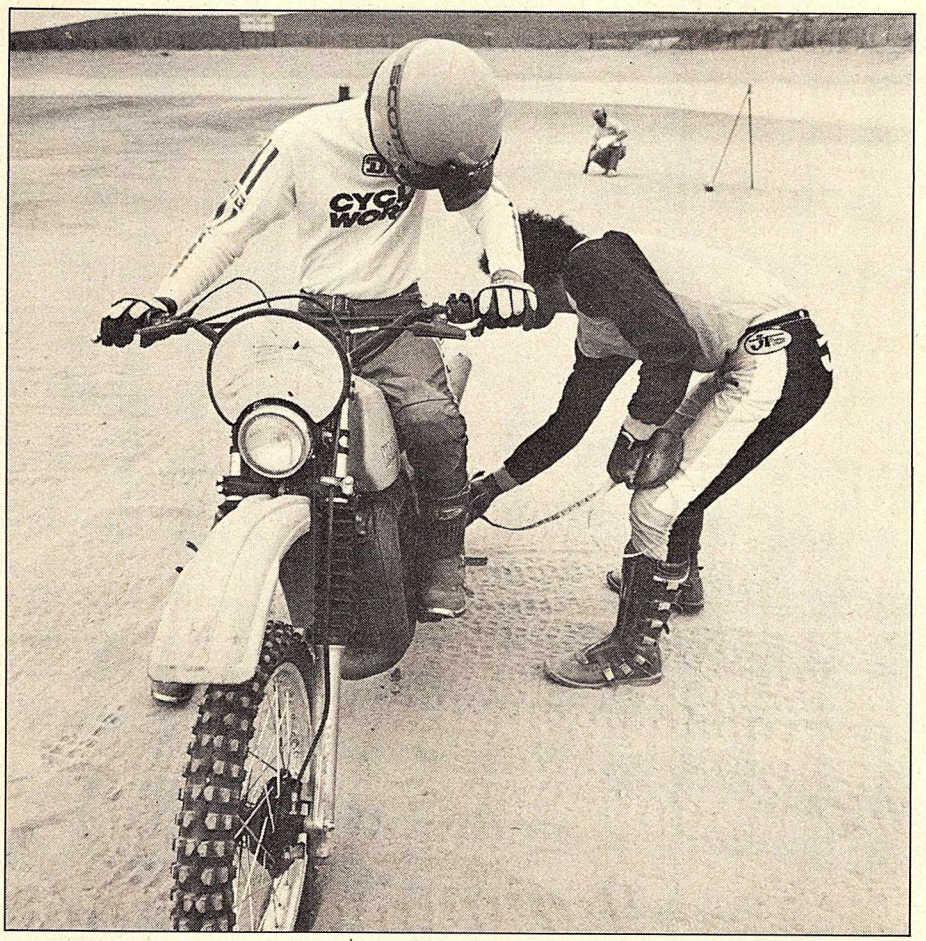
SPECIFICATIONS—Front Tire

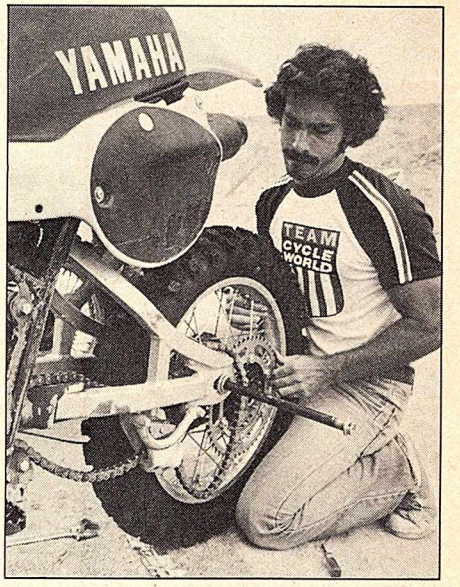
Model	M808 Motocross
Size	3.00-21
Price	$28.92
Diameter	27.5 in.
Width	3.4 in.
Aspect ratio	96%
Tread depth, center	16/32 in.
Plys/ply rating	4/4
Cord material	nylon
Weight	9.0 lb.
Durometer reading	68

SPECIFICATIONS—Rear Tire

Model	M20 Motocross
Size	5.10-18
Price	$49.00
Diameter	27.0 in.
Width	4.7 in.
Aspect ratio	96%
Tread depth, center	24/32 in.
Plys/ply rating	4/4
Cord material	nylon
Weight	14.0 lb.
Durometer reading	70

Photos by Ron Griewe

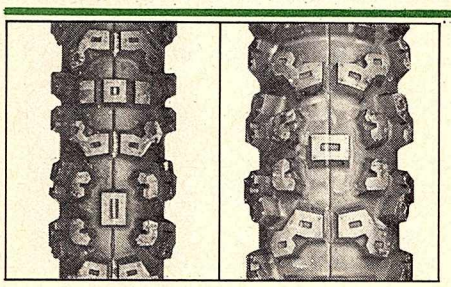




nine tires were all rated excellent for control.

One brand of tire consistantly came up at the top of our result sheets—Pirelli. The MT16s tied for first on the hard pack course, tied for first on the sand MX course, won the top spot on the flat track test, placed second in the braking test, and got seventh in the acceleration test. The Pirelli MT25s didn't fare as well as the MT16s but won the acceleration test.

Metzelers also finished consistently high in the MX course tests. The 3.25-21 com-



BRIDGESTONE

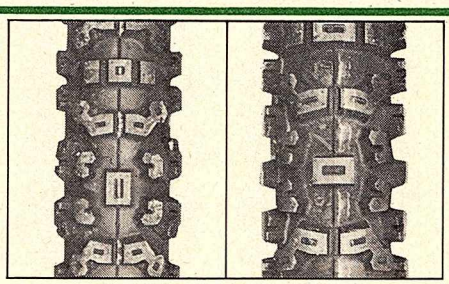
Country of origin ..... Japan

SPECIFICATIONS—Front Tire

Model	M15 Motocross (claw)
Size	3.00-21
Price	$29.30
Diameter	27.8 in.
Width	3.5 in.
Aspect ratio	97%
Tread depth, center	14/32 in.
Plys/ply rating	4/4
Cord material	nylon
Weight	9.0 lb.
Durometer reading	68

SPECIFICATIONS—Rear Tire

Model	M16 Motocross (claw)
Size	5.10-18
Price	$42.30
Diameter	27.0 in.
Width	5.0 in.
Aspect ratio	90%
Tread depth, center	22/32 in.
Plys/ply rating	4/4
Cord material	nylon
Weight	13.0 lb.
Durometer reading	68



BRIDGESTONE

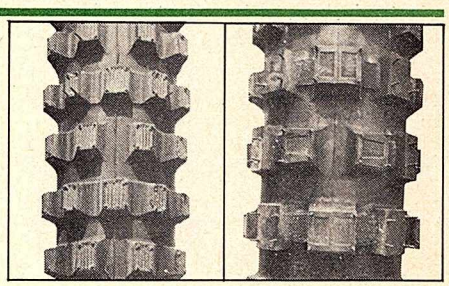
Country of origin ..... Japan

SPECIFICATIONS—Front Tire

Model	M15 Motocross (claw)
Size	3.00-21
Price	$29.30
Diameter	27.8 in.
Width	3.5 in.
Aspect ratio	97%
Tread depth, center	14/32 in.
Plys/ply rating	4/4
Cord material	nylon
Weight	9.0 lb.
Durometer reading	68

SPECIFICATIONS—Rear Tire

Model	ED-2 Gritty (claw)
Size	4.60-18
Price	$43.80
Diameter	27.0 in.
Width	4.7 in.
Aspect ratio	96%
Tread depth, center	21/32 in.
Plys/ply rating	4/6
Cord material	nylon
Weight	11.75 lb.
Durometer reading	68



DICK CEPEK

Country of origin ..... USA

SPECIFICATIONS—Front Tire

Model	(rear only available, 3.25-21 Metzeler used on front)

SPECIFICATIONS—Rear Tire

Model	Teraflex
Size	5.00-18
Price	$69.95
Diameter	26.7 in.
Width	5.5 in.
Aspect ratio	79%
Tread depth, center	32/32 in.
Plys/ply rating	4/4
Cord material	nylon
Weight	16.0 lb.
Durometer reading	62

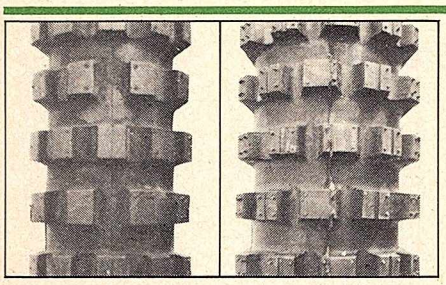
bined with a 4.50-18 rear tied with the Pirellis for first on the sand course, grabbed second on the flat track, and the low profile 3.00-21 and 110/90-18 Metzelers tied for first on the hard pack MX course. However, the Metzelers didn't finish nearly as well as the Pirellis on the braking or acceleration tests. The 3.25/4.50 Metzeler combination finished next to last on the braking and acceleration tests.

Goodyear's new MXII also finished well in several tests and took second and third place honors in the drag tests.

Other makes worthy of mention are the Yokohama 902 and 907 models that teamed to stop substantially quicker than the others and also accelerated rapidly. The Dick Cepek Teraflex (Cepek is an off-road supplier for four wheel drive vehicles), with its full 1-in. knobs proved to be the sleeper of the group. It finished third on the flat track and second on the sand track.

Our cross-country impressions were the least detailed test but tended to indicate cross country tire choice is much less critical than the choice for MX as 10 of the models made the excellent list.

Our knobby tire test was meant to test tires at their extremes as fairly and accurately as possible. We feel we have accomplished this. Due to personal preferences, soil types, riding conditions, and different demands placed on tires by bike design and engine size, the winners of our different events may not be the absolute best for your use, but we feel the test will be helpful when it comes time for new shoes for the old scoot. ◙



DUNLOP

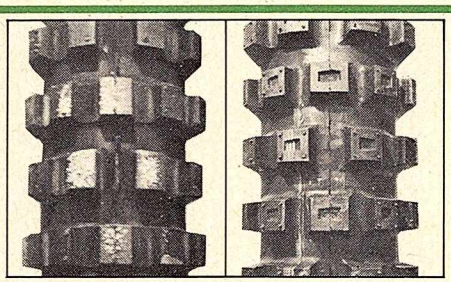
Country of origin ..... Japan/USA

SPECIFICATIONS—Front Tire

Model	K190 Sports
Size	3.25-21
Price	$35.72
Diameter	27.8 in.
Width	3.8 in.
Aspect ratio	89%
Tread depth, center	16/32 in.
Plys/ply rating	4/4
Cord material	rayon
Weight	11.0 lb.
Durometer reading	62

SPECIFICATIONS—Rear Tire

Model	K88HT
Size	5.10-18
Price	$51.52
Diameter	27.4 in.
Width	5.5 in.
Aspect ratio	85%
Tread depth, center	23/32 in.
Plys/ply rating	4/4
Cord material	nylon
Weight	15.75 lb.
Durometer reading	62



DUNLOP

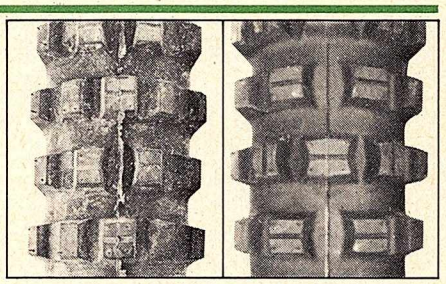
Country of origin ..... Japan

SPECIFICATIONS—Front Tire

Model	K190 Sports
Size	3.00-21
Price	$32.33
Diameter	27.5 in.
Width	3.5 in.
Aspect ratio	93%
Tread depth, center	16/32 in.
Plys/ply rating	4/4
Cord material	rayon
Weight	11.0 lb.
Durometer reading	62

SPECIFICATIONS—Rear Tire

Model	K190 Sports
Size	4.60-18
Price	$40.55
Diameter	26.5 in.
Width	5.0 in.
Aspect ratio	85%
Tread depth, center	20/32 in.
Plys/ply rating	4/4
Cord material	nylon
Weight	13.25 lb.
Durometer reading	62



GOODYEAR

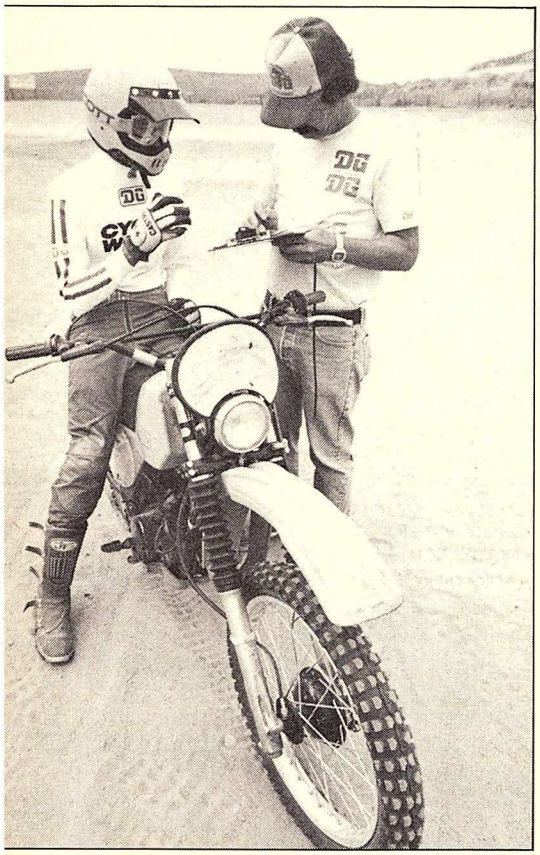
Country of origin ..... USA

SPECIFICATIONS—Front Tire

Model	Eagle MXII
Size	3.00-21
Price	$46.65
Diameter	28.0 in.
Width	3.5 in.
Aspect ratio	100 %
Tread depth, center	17/32 in.
Plys/ply rating	4/4
Cord material	nylon
Weight	9.5 lb.
Durometer reading	60

SPECIFICATIONS—Rear Tire

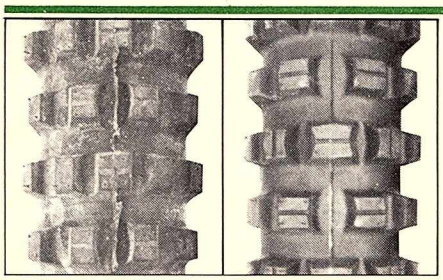
Model	Eagle MXII
Size	4.50-18
Price	$62.20
Diameter	26.8 in.
Width	4.5 in.
Aspect ratio	98%
Tread depth, center	26/32 in.
Plys/ply rating	4/4
Cord material	nylon
Weight	12.5 lb.
Durometer reading	64



BRAKING

(both wheels fully locked from 30 mph)

	Distance (ft.)	Control
1 Yokohama 902, 3.00-21 and 907, 5.00-18	36.1	ex
2 Pirelli MT16, 3.00-21 and 4.00-18	39.9	ex
3 Yokohama 902, 3.00-21 and 907, 5.50-18	40.9	ex
4 Bridgestone M808, 3.00-21 and M18, 5.10-18	41.1	ex
5 Pirelli MT25, 3.00-21 and 4.50-18	41.5	ex
6 Goodyear MXII, 3.00-21 and 4.75-18	41.6	ex
7 Dunlop K190, 3.25-21 and K88HT, 5.10-18	41.7	ex
7 Dunlop K190, 3.00-21 and K190, 4.60-18	41.7	ex
8 Metzeler 3.00-21 and 110/90-18	42.3	ex
9 Bridgestone M808, 3.00-21 and M20, 5.10-18	42.5	ex
10 IRC GS45X, 3.00-21 and GS56F, 5.10-18	42.9	good
11 IRC GS45X, 3.00-21 and GS45V, 4.50-18	43.0	good
12 Nankang 3.00-21 and 5.00-18	43.1	ex
13 Hi-Point Red Dot, 3.00-21 and 4.50-18	43.9	good
13 Trelleborg T644, 3.50-21 and 5.50-18	43.9	good
14 Dick Cepek Teraflex, 5.00-18 and Metzeler 3.25-21	44.7	good
15 Goodyear MXII, 3.00-21 and 4.50-18	45.6	good
16 Bridgestone (claw) M-15, 3.00-21 and M-16, 5.10-18	45.9	good
17 Bridgestone (claw) M-15, 3.00-21 and ED-2, 4.60-18	46.0	good
18 Metzeler 3.25-21 and 4.50-18	47.0	ex
19 Barum S28, 3.25-21 and 4.75-18	47.7	good



GOODYEAR

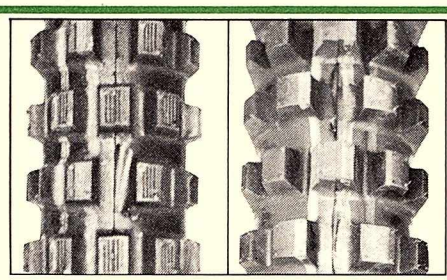
Country of origin ..... USA

SPECIFICATIONS—Front Tire

Model ..... Eagle MXII
Size 3.00-21
Price $46.65
Diameter ..... 28.0 in.
Width ..... 3.5 in.
Aspect ratio 100%
Tread depth, center ..... 17/32 in.
Plys/ply rating 4/4
Cord material ..... nylon
Weight ..... 9.5 lb.
Durometer reading 60

SPECIFICATIONS—Rear Tire

Model ..... Eagle MXII
Size 4.75-18
Price $62.20
Diameter ..... 27.0 in.
Width ..... 4.9 in.
Aspect ratio 92%
Tread depth, center ..... 22/32 in.
Plys/ply rating 4/4
Cord material ..... nylon
Weight ..... 14.0 lb.
Durometer reading 62



HI-POINT

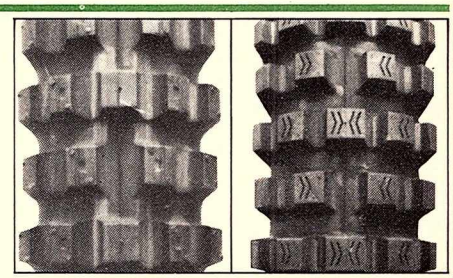
Country of origin ..... USA

SPECIFICATIONS—Front Tire

Model ..... Red Dot
Size 3.00-21
Price $39.00
Diameter ..... 27.9 in.
Width ..... 3.5 in.
Aspect ratio 99%
Tread depth, center ..... 17/32 in.
Plys/ply rating 4/4
Cord material ..... nylon
Weight ..... 10.25 lb.
Durometer reading 59

SPECIFICATIONS—Rear Tire

Model ..... Red Dot
Size 4.50-18
Price $45.00
Diameter ..... 27.25 in.
Width ..... 4.7 in.
Aspect ratio 98%
Tread depth, center ..... 23/32 in.
Plys/ply rating 4/4
Cord material ..... nylon
Weight ..... 15.5 lb.
Durometer reading 62



IRC

Country of origin ..... Japan

SPECIFICATIONS—Front Tire

Model ..... GS45X Motocross
Size 3.00-21
Price $31.00
Diameter ..... 27.4 in.
Width ..... 3.4 in.
Aspect ratio 94%
Tread depth, center ..... 13/32 in.
Plys/ply rating 4/4
Cord material ..... nylon
Weight ..... 8.25 lb.
Durometer reading 64

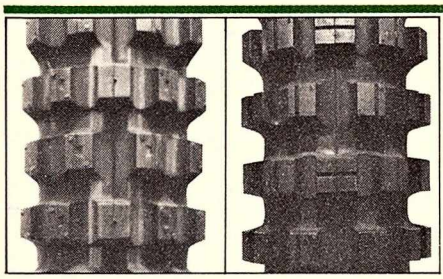
SPECIFICATIONS—Rear Tire

Model ..... GS45V Motocross
Size 4.50-18
Price $45.05
Diameter ..... 26.8 in.
Width ..... 5.0 in.
Aspect ratio 88%
Tread depth, center ..... 19/32 in.
Plys/ply rating 4/4
Cord material ..... nylon
Weight ..... 16.0 lb.
Durometer reading 60

ACCELERATION RATING

(dead stop to 100 ft.)

	Seconds	Control
1 Pirelli MT25, 3.00-21 and 4.50-18	2.77	ex
2 Goodyear MXII, 3.00-21 and 4.50-18	2.79	ex
3 Goodyear MXII, 3.00-21 and 4.75-18	2.80	ex
4 Bridgestone M808, 3.00-21 and M20, 5.10-18	2.81	ex
5 Yokohama 902, 3.00-21 and 907, 5.50-18	2.82	ex
6 Yokohama 902, 3.00-21 and 907, 5.00-18	2.85	ex
7 Pirelli MT16, 3.00-21 and 4.00-18	2.86	ex
8 Dunlop K190, 3.25-21 and K88HT, 5.10-18	2.91	ex
8 Dick Cepek Teraflex 5.00-18 and Metzeler 3.25-21	2.91	good
9 Metzeler 3.00-21 and 110/90-18	2.92	ex
10 Hi-Point Red Dot, 3.00-21 and 4.50-18	2.96	good
10 Dunlop K190, 3.00-21 and K190, 4.60-18	2.96	ex
11 Bridgestone (claw) M-15, 3.00-21 and ED-2, 4.60-18	2.98	good
12 Bridgestone (claw) M-15, 3.00-21 and M-16, 5.10-18	2.99	good
12 Trelleborg T644, 3.50-21 and 5.50-18	2.99	good
12 Bridgestone M808, 3.00-21 and M18, 5.10-18	2.99	good
13 Barum S28, 3.25-21 and 4.75-18	3.02	poor
14 Nankang 3.00-21 and 5.00-18	3.03	fair
15 IRC GS45X, 3.00-21 and GS56F, 5.10-18	3.06	fair
16 Metzeler 3.25-21 and 4.50-18	3.09	fair
17 IRC GS45X, 3.00-21 and GS45V, 4.50-18	3.12	good



IRC

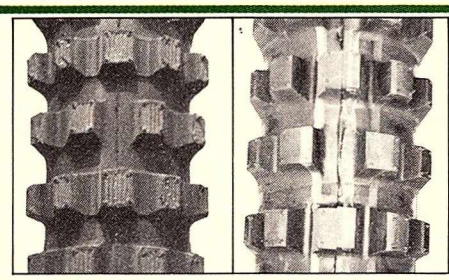
Country of origin ..... Japan

SPECIFICATIONS—Front Tire

Model ..... GS45X Motocross
Size 3.00-21
Price $31.00
Diameter ..... 27.4 in.
Width ..... 3.4 in.
Aspect ratio 94%
Tread depth, center ..... 13/32 in.
Plys/ply rating 4/4
Cord material ..... nylon
Weight ..... 8.25 lb.
Durometer reading 64

SPECIFICATIONS—Rear Tire

Model ..... GS56F Motocross
Size 5.10-18
Price $44.80
Diameter ..... 26.8 in.
Width ..... 5.4 in.
Aspect ratio 81%
Tread depth, center ..... 20/32 in.
Plys/ply rating 4/4
Cord material ..... nylon
Weight ..... 13.75 lb.
Durometer reading 70



METZELER

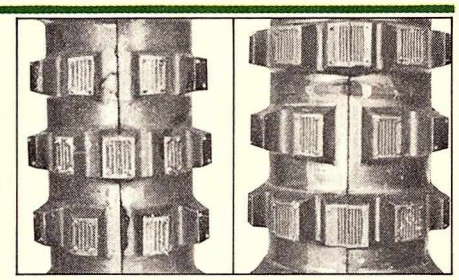
Country of origin ..... Germany

SPECIFICATIONS—Front Tire

Model ..... MX/Enduro
Size 3.25-21
Price $43.00
Diameter ..... 28.8 in.
Width ..... 3.5 in.
Aspect ratio 111%
Tread depth, center ..... 17/32 in.
Plys/ply rating 4/4
Cord material ..... rayon
Weight ..... 12.0 lb.
Durometer reading 64

SPECIFICATIONS—Rear Tire

Model ..... MX/Enduro
Size 4.50-18
Price $51.00
Diameter ..... 26.8 in.
Width ..... 4.8 in.
Aspect ratio 92%
Tread depth, center ..... 24/32 in.
Plys/ply rating 4/4
Cord material ..... rayon
Weight ..... 14.0 lb.
Durometer reading 62



METZELER

Country of origin ..... Germany

SPECIFICATIONS—Front Tire

Model ..... MX/Enduro
Size 3.00-21
Price $40.00
Diameter ..... 27.9 in.
Width ..... 3.25 in.
Aspect ratio 106%
Tread depth, center ..... 17/32 in.
Plys/ply rating 4/4
Cord material ..... rayon
Weight ..... 11.0 lb.
Durometer reading 60

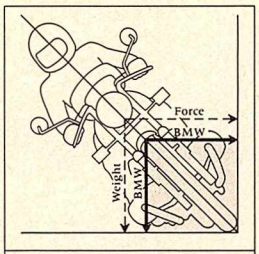
SPECIFICATIONS—Rear Tire

Model ..... MX/Enduro
Size 110/90-18
Price $49.00
Diameter ..... 26.0 in.
Width ..... 4.7 in.
Aspect ratio 85%
Tread depth, center ..... 25/32 in.
Plys/ply rating 4/4
Cord material ..... rayon
Weight ..... 14.5 lb.
Durometer reading 61

THE HIGH PRICE OF BALANCED POWER.

Balance. It is, after all, what everyone ultimately seeks to attain—one way or another—both in life and on the road.

It is the singleminded philosophy behind the most elegantly engineered and expensive bike on the road:



Horizontally opposed cylinders are key to a lower c.g. (See difference in weight/force distribution lines, above.)

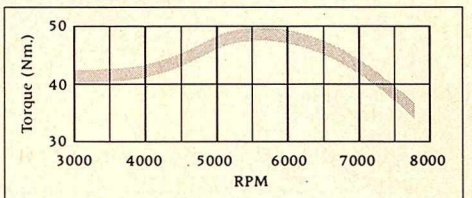
To achieve the lightest weight and the most constant production of transferable power for the sanest, most comfortable ride.

The BMW balance of Weight to Power. It is a balance of road handling ability that commences with the lightweight, costly virgin aluminum alloy of its engine block and proves itself—through optimum placement of its center of gravity—in the most demanding of turn patterns.

A balance of power—sane yet instantly responsive power through a wide range of r.p.m. (see torque chart at right)—developed by BMW's unique twin opposed flat engine.

Exceptional touring range. Plus a balance of road advantages that include an unusually large fuel tank, high **BMW.** m.p.g.—and a resulting touring range up to twenty percent greater than that of comparably powered motorcycles.

In the summing up words of a recent exhaustive independent test drive article, the BMW R65 pictured here offers "...a unique combination of features—middleweight displacement, shaft final drive and ultra-sporting handling—that has carved the BMW 650 its own niche. No other bike combines all three of those qualities for any price."



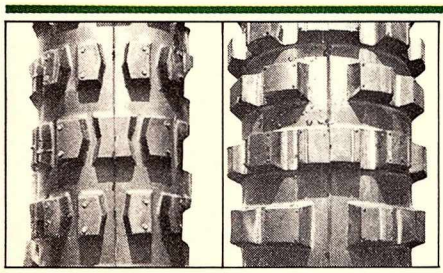
Note: 90% of the maximum torque of this BMW R65 is available over a remarkable 2750 r.p.m. bandwidth.

To compromise or not to compromise. If you remain one of the many who, for some reason, still lusts after a hundred unbalanced horses whose power can seldom be sanely transmitted to the road, or a hundred unbalanced extra pounds to lug around those curves—you might just as well turn the page.

If, on the other hand, you are one of the few who values above all the feeling of being recognized as a true, balanced individual of the road, you're home. **BMW.**

FOR ONE LONG SHINING MOMENT, STOP COMPROMISING.

See the full line of BMW's at your local BMW Dealer—listed in Yellow Pages. Ask about our special European Delivery Plan. For the complete BMW brochure, write: Butler & Smith, Inc., Dept. W—11,Norwood, N.J. 07648. Canada: BMW Motorcycle Distributors, P.O. Box 3450, Don Mills, Ontario.



NANKANG

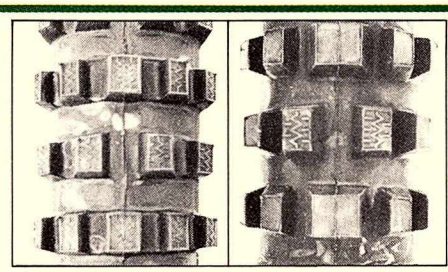
Country of Origin ..... Taiwan

SPECIFICATIONS—Front Tire

Model	MX
Size	3.00-21
Price	$26.00
Diameter	27.8 in.
Width	3.1 in.
Aspect ratio	110%
Tread depth, center	15/32 in.
Plys/ply rating	4/4
Cord material	nylon
Weight	8.0 lb.
Durometer reading	60

SPECIFICATIONS—Rear Tire

Model	MX
Size	5.00-18
Price	$48.00
Diameter	28.25 in.
Width	5.1 in.
Aspect ratio	100%
Tread depth, center	22/32 in.
Plys/ply rating	4/4
Cord material	nylon
Weight	15.75 lb.
Durometer reading	64



PIRELLI

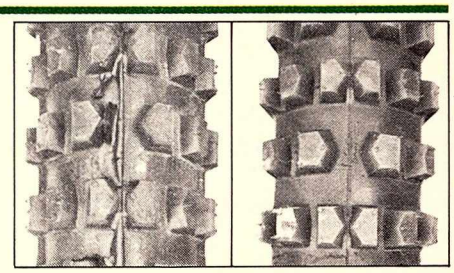
Country of origin ..... Italy

SPECIFICATIONS—Front Tire

Model	MT16 Garacross
Size	3.00-21
Price	$53.95
Diameter	27.8 in.
Width	3.5 in.
Aspect ratio	97%
Tread depth, center	17/32
Plys/ply rating	3/3
Cord material	rayon
Weight	9.0 lb.
Durometer reading	60

SPECIFICATIONS—Rear Tire

Model	MT16 Garacross
Size	4.00-18
Price	$66.50
Diameter	26.9 in.
Width	4.7 in.
Aspect ratio	95%
Tread depth, center	26/32 in.
Plys/ply rating	4/4
Cord material	rayon
Weight	13.0 lb.
Durometer reading	64



PIRELLI

Country of origin ..... Spain

SPECIFICATIONS—Front Tire

Model	MT25 Pentacross
Size	3.00-21
Price	$53.95
Diameter	27.7 in.
Width	3.5 in.
Aspect ratio	96%
Tread depth, center	13/32 in.
Plys/ply rating	3/3
Cord material	rayon
Weight	9.0 lb.
Durometer reading	60

SPECIFICATIONS—Rear Tire

Model	MT25 Pentacross
Size	4.50-18
Price	$71.95
Diameter	26.9 in.
Width	4.8 in.
Aspect ratio	93%
Tread depth, center	21/32 in.
Plys/ply rating	4/4
Cord material	rayon
Weight	14.0 lb.
Durometer reading	64

CROSS COUNTRY IMPRESSION

Excellent

Bridgestone M808, 3.00-21 and M20, 5.10-18
Dunlop K190, 3.25-21 and K88HT, 5.10-18
Dunlop K190, 3.00-21 and K190, 4.60-18
Hi-Point Red Dot, 3.00-21 and 4.50-18
Metzeler 3.25-21 and 4.50-18
Metzeler 3.00-21 and 110/90-18
Nankang 3.00-21 and 5.00-18
Pirelli MT16, 3.00-21 and 4.00-18
Pirelli MT25E, 3.00-21 and 4.50-18
Yokohama 902, 3.00-21 and 907, 5.00-18

Good

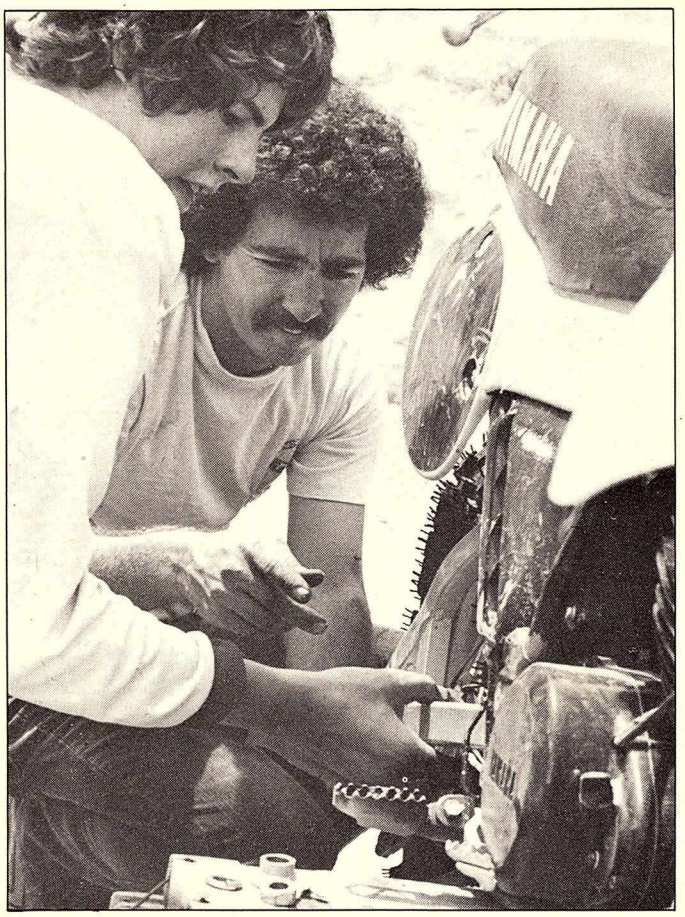
Barum S28, 3.00-21 and 4.75-18
Bridgestone M808, 3.00-21 and M18, 5.10-18
Dick Cepek Teraflex, 5.00-18 (rear only available)
Goodyear MXII, 3.00-21 and 4.75-18

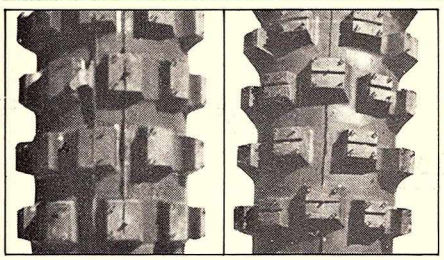
Fair

Goodyear MXII, 3.00-21 and 4.50-18
IRC GS45X, 3.00-21 and GS56F, 5.10-18
Trelleborg T644, 3.50-21 and 5.50-18
Yokohama 902, 3.00-21 and 907, 5.50-18

Poor

Bridgestone (claw) M15, 3.00-21 and ED-2, 4.60-18
Bridgestone (claw) M-15, 3.00-21 and M-16, 5.10-18
IRC GS45X, 3.00-21 and GS45V, 4.50-18





TRELLEBORG

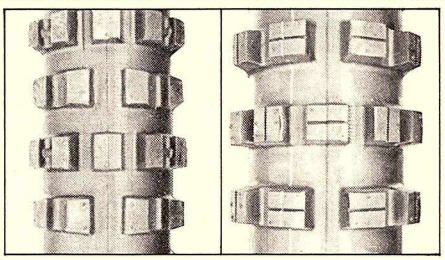
Country of origin ..... Sweden

SPECIFICATIONS—Front Tire

Model	T644 Motocross
Size	3.50-21
Price	$40.10
Diameter	28.0 in.
Width	3.5 in.
Aspect ratio	100%
Tread depth, center	16/32 in.
Plys/ply rating	4/4
Cord material	nylon
Weight	10.0 lb.
Durometer reading	66

SPECIFICATIONS—Rear Tire

Model	744 Ten Master MX
Size	5.50-18
Price	$54.65
Diameter	26.5 in.
Width	5.0 in.
Aspect ratio	85%
Tread depth, center	18/32
Plys/ply rating	4/4
Cord material	nylon
Weight	15.5 lb.
Durometer reading	60



YOKOHAMA

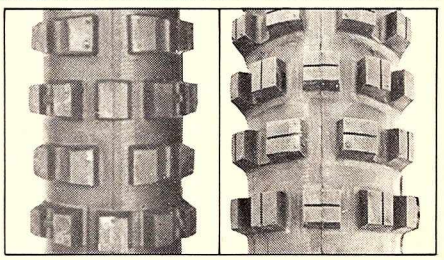
Country of origin ..... Japan

SPECIFICATIONS—Front Tire

Model	Super Digger 902
Size	3.00-21
Price	$38.03
Diameter	27.4 in.
Width	3.5 in.
Aspect ratio	91%
Tread depth, center	16/32 in.
Plys/ply rating	4/4
Cord material	nylon
Weight	8.5 lb.
Durometer reading	62

SPECIFICATIONS—Rear Tire

Model	Super Digger 907
Size	5.00-18
Price	$55.55
Diameter	27.0 in.
Width	4.9 in.
Aspect ratio	92%
Tread depth, center	25/32 in.
Plys/ply rating	4/4
Cord material	nylon
Weight	14.0 lb.
Durometer reading	64



YOKOHAMA

Country of origin ..... Japan

SPECIFICATIONS—Front Tire

Model	Super Digger 902
Size	3.00-21
Price	$38.03
Diameter	27.4 in.
Width	3.5 in.
Aspect ratio	91%
Tread depth, center	16/32 in.
Plys/ply rating	4/4
Cord material	nylon
Weight	8.5 in.
Durometer reading	62

SPECIFICATIONS—Rear Tire

Model	Super Digger 907
Size	5.50-18
Price	$57.20
Diameter	27.5 in.
Width	5.25 in.
Aspect ratio	90%
Tread depth, center	22/32 in.
Plys/ply rating	4/4
Cord material	nylon
Weight	16.0 lb.
Durometer reading	66

SAND MX COURSE RATING

	Pre-corner control	Cornering control	Confidence in tire	Overall handling
	pro-1/pro-2	pro-1/pro-2	pro-1/pro-2	pro-1/pro-2
1 Metzeler 3.25-21 and 4.50-18	ex/ex	ex/ex	ex/ex	ex/ex
1 Pirelli MT16, 3.00-21 and 4.00-18	ex/ex	ex/ex	ex/ex	ex/ex
2 Dick Cepek Teraflex 5.00-18 and Metzeler 3.25-21	good/ex	good/ex	fair/ex	fair/ex
3 Metzeler 3.00-21 and 110/90-18	good/ex	good/good	good/ex	good/good
3 IRC GS45X, 3.00-21 and GS45V, 4.50-18	ex/ex	good/good	good/good	good/good
3 Hi-Point Red Dot, 3.00-21 and 4.50-18	ex/ex	good/good	good/good	good/good
3 Bridgestone M808, 3.00-21 and M20, 5.10-18	ex/ex	good/good	good/good	good/good
3 IRC GS45X, 3.00-21 and GS56F, 5.10-18	good/good	good/good	ex/ex	good/good
4 Goodyear MXII, 3.00-21 and 4.75-18	good/good	good/good	good/good	good/good
4 Dunlop K190, 3.25-21 and K88HT, 5.10-18	good/good	good/good	good/good	good/good
4 Pirelli MT25, 3.00-21 and 4.50-18	good/good	good/good	good/good	good/good
4 Yokohama 902, 3.00-21 and 907, 5.00-18	good/good	good/good	good/good	good/good
5 Bridgestone M808, 3.00-21 and M18, 5.10-18	fair/fair	good/good	good/good	good/good
6 Trelleborg T644, 3.50-21 and 5.50-18	fair/good	fair/good	fair/good	fair/good
7 Goodyear MXII, 3.00-21 and 4.50-18	poor/good	fair/good	poor/good	fair/good
8 Nankang 3.00-21 and 5.00-18	fair/fair	fair/fair	fair/fair	fair/fair
9 Dunlop K190, 3.00-21 and 4.60-18	poor/fair	fair/fair	fair/fair	fair/fair
10 Barum S28, 3.25-21 and 4.75-18	fair/fair	poor/fair	fair/fair	fair/fair
11 Bridgestone (claw) M-15, 3.00-21 and M-16, 5.10-18	fair/fair	poor/poor	poor/poor	poor/fair
12 Yokohama 902, 3.00-21 and 907, 5.50-18	poor/poor	poor/fair	poor/poor	poor/poor
13 Bridgestone (claw) M-15, 3.00-21 and ED-2, 4.60-18	poor/poor	poor/poor	poor/poor	poor/poor

HARD PACK MX TRACK RATING

	Pre-corner control	Cornering control	Confidence in tire	Overall handling
	pro-1/pro-2	pro-1/pro-2	pro-1/pro-2	pro-1/pro-2
1 Pirelli MT16, 3.00-21 and 4.00-18	ex/ex	ex/ex	ex/ex	ex/ex
1 Metzeler 3.00-21 and 110/90-18	ex/ex	ex/ex	ex/ex	ex/ex
2 Hi-Point Red Dot, 3.00-21 and 4.50-18	good/ex	ex/ex	good/ex	good/ex
3 Goodyear MXII, 3.00-21 and 4.75-18	good/ex	good/ex	good/ex	good/ex
3 Metzeler 3.25-21 and 4.50-18	good/good	good/good	ex/ex	ex/ex
4 Yokohama 902, 3.00-21 and 907, 5.00-18	good/good	good/ex	good/ex	good/good
5 Dunlop K190, 3.00-21 and 4.60-18	good/good	good/ex	good/good	good/good
6 Pirelli MT25, 3.00-21 and 4.50-18	good/good	good/good	good/good	good/good
6 Goodyear MXII, 3.00-21 and 4.50-18	good/good	good/good	good/good	good/good
7 Dick Cepek Teraflex, 5.00-18 and Metzeler 3.25-21	fair/good	poor/good	poor/ex	poor/ex
8 IRC GS45X, 3.00-21 and GS56F, 5.10-18	good/good	good/good	good/good	good/good
9 Dunlop K190, 3.25-21 and K88HT, 5.10-18	good/good	fair/good	good/good	good/good
10 Trelleborg T644, 3.50-21 and 5.50-18	poor/good	fair/good	fair/good	fair/good
11 Bridgestone M808, 3.00-21 and M20, 5.10-18	fair/good	poor/good	fair/good	fair/good
12 IRC GS45X, 3.00-21 and GS45V, 4.50-18	fair/good	fair/fair	fair/fair	fair/good
13 Bridgestone M808, 3.00-21 and M18, 5.10-18	fair/good	fair/good	fair/fair	fair/fair
14 Bridgestone (claw) M-15, 3.00-21 and M-16, 5.10-18	fair/fair	fair/fair	fair/fair	fair/fair
15 Barum S28, 3.25-21 and 4.75-18	poor/poor	fair/fair	poor/poor	fair/fair
16 Bridgestone (claw) M-15, 3.00-21 and ED-2, 4.60-18	poor/poor	poor/fair	poor/fair	poor/fair
17 Nankang 3.00-21 and 5.00-18	poor/poor	poor/poor	poor/poor	poor/poor
17 Yokohama 902, 3.00-21 and 907, 5.50-18	poor/poor	poor/poor	poor/poor	poor/poor

FLAT TRACK RATING

	Pre-corner control	Cornering control	Confidence in tire	Overall handling
	pro-1/pro-2	pro-1/pro-2	pro-1/pro-2	pro-1/pro-2
1 Pirelli MT16, 3.00-21 and 4.00-18	ex/ex	ex/ex	ex/ex	ex/ex
2 Metzeler 3.25-21 and 4.50-18	ex/ex	good/ex	ex/ex	ex/ex
2 Pirelli MT25, 3.00-21 and 4.50-18	good/ex	ex/ex	ex/ex	ex/ex
3 Dick Cepek Teraflex, 5.00-18 and Metzeler 3.25-21	good/ex	good/ex	good/ex	good/ex
3 Trelleborg T644, 3.50-21 and 5.50-18	good/ex	good/ex	good/ex	good/ex
4 Goodyear MXII, 3.00-21 and 4.75-18	good/good	ex/ex	good/good	good/good
5 Metzeler 3.00-21 and 110/90-18	good/good	fair/good	good/ex	good/ex
6 Nankang 3.00-21 and 5.00-18	good/good	good/good	good/good	good/good
6 Dunlop K190, 3.25-21 and K88HT, 5.10-18	good/good	good/good	good/good	good/good
7 IRC GS45X, 3.00-21 and GS56F, 5.10-18	good/good	fair/fair	good/good	good/good
7 IRC GS45X, 3.00-21 and GS45V, 4.50-18	fair/fair	good/good	good/good	good/good
8 Bridgestone (claw) M-15, 3.00-21 and M-16, 5.10-18	fair/fair	fair/fair	fair/fair	fair/fair
8 Goodyear MXII, 3.00-21 and 4.50-18	fair/fair	fair/fair	fair/fair	fair/fair
8 Bridgestone (claw) M-15, 3.00-21 and ED-2, 4.60-18	fair/fair	fair/fair	fair/fair	fair/fair
9 Bridgestone M808, 3.00-21 and M20, 5.10-18	fair/fair	poor/poor	fair/fair	fair/fair
10 Barum S28, 3.25-21 and 4.75-18	fair/good	poor/fair	poor/fair	poor/fair
11 Bridgestone M808, 3.00-21 and M-18, 5.10-18	poor/poor	fair/fair	poor/fair	poor/fair
12 Hi-Point Red Dot, 3.00-21 and 4.50-18	fair/fair	poor/poor	poor/poor	poor/poor
13 Yokohama 902, 3.00-21 and 907, 5.50-18	poor/poor	poor/poor	poor/poor	poor/poor
13 Dunlop K190, 3.00-21 and 4.60-18	poor/poor	poor/poor	poor/poor	poor/poor
13 Yokohama 902, 3.00-21 and 907, 5.00-18	poor/poor	poor/poor	poor/poor	poor/poor

Scott Motocross Boots

They're Expensive. They're Complicated. And They Work.

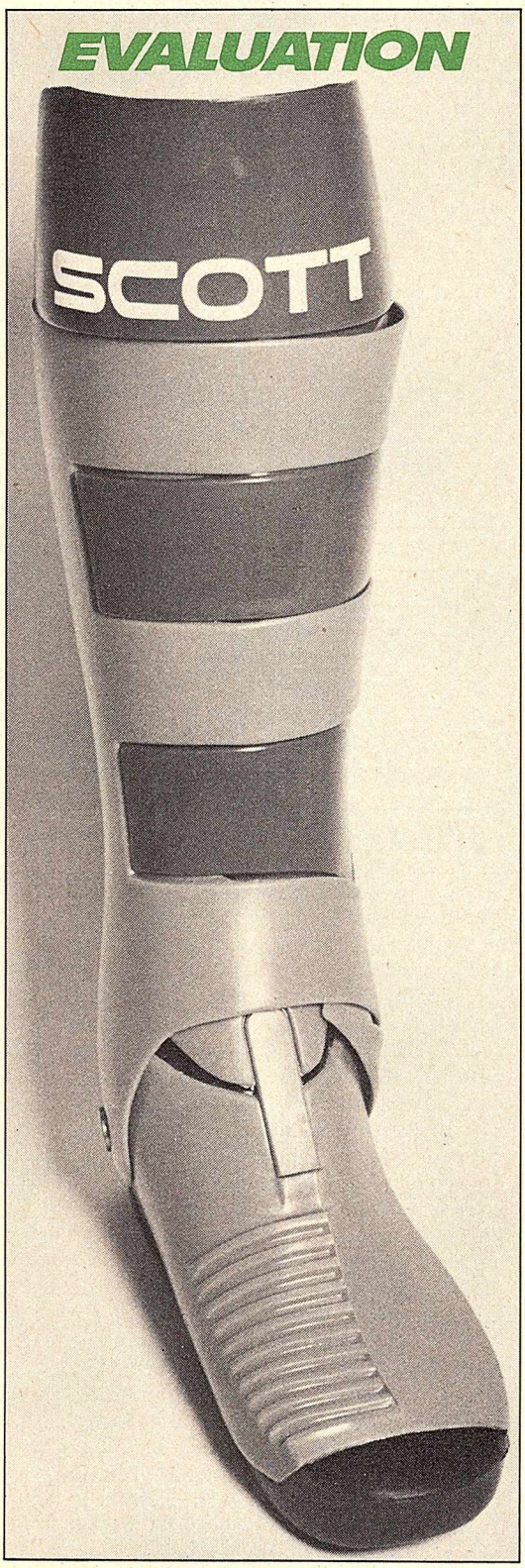
Scott motocross boots may have received the most preproduction publicity of any motorcycle accessory in history. Handmade prototypes were being worn and evaluated by guys like Gerrit Wolsink, Mark Blackwell, Danny LaPorte and Bob Hannah for a couple of years before the boots went on sale. Almost every test session furnished input about how to make them better. After more than two years of development and 15 different configurations, Scott USA finalized the design.

Scott Boyer of Scott USA guided the boot project. He is an avid biker and expert enduro rider so the basic design of components reflects more than just the motocrosser's desires.

Scott USA already produced fine plastic ski boots, and felt motorcycle boots shouldn't be a whole lot different. Had they realized the difficulties, the Scott plastic boot probably wouldn't exist. Making motorcycle boots from plastic poses design problems because of the need for ankle movement. Where a ski boot needs a good solid ankle and movement is slight, this type design makes bike riding almost impossible. The simple and easy solution would have been a straight pivot at each side of the ankle. But Scott's quest for perfection led to development of their patented Floating Hinge for forward, backward and lateral movement. This unique hinge system duplicates the movement of the human ankle and it is placed on the outside of the lower boot shell to prevent ankle injuries and bruises.

The lower part of the boot also required a special design so ankle movement wouldn't be hampered. Where the lowers extend up into the upper, plastic hinges were developed. The rear portion proved easier than the front. Hinging at the rear was accomplished by notching the extension so it could fold easily. The front required more movement than the rear and a separate tongue with a plastic hinge was developed.

Scott felt conventional buckle designs were unsatisfactory for a motorcycle boot. They are easily bent, fouled or removed by brush, tree stumps and rocks. Ski boot type buckles were also considered too protrusive. Clearly the Scott boot needed a buckle system that would be an integral part of the boot. Designing a non-obtrusive system that didn't come unhooked during the heat of competition took many hours of R and D time.



The Scott plastic boot is a totally new design.

Many different sole materials and shapes were tried and discarded before a rounded, replaceable rubber compound was chosen. It is a clever design that eliminates the problem steel toe piece of normal MX boots. The rubber sole is molded to include a toe cap. The troublesome metal toe guard on leather boots keeps the sole from being torn apart but they are difficult to keep on the boot. The Scott design does the same job, but better, and without the constant maintenance.

Even the sizing of the Scott boots is unique. Two shell sizes are used: the small size takes booties for size 7, 8, 9 and 10; the large shell is sized with 11, 12 and 13 booties. This reduces the cost of molds and reduces the stock a dealer needs to carry. By stocking a pair of each size shell and one each of the booty sizes, he can fit almost any customer that walks through his door.

The production Scott boot is made from several different materials, none of them leather. The red parts are polyurethane plastic, the blue is polypropolene plastic, the waterproof lining is nylon, booties are foam rubber, and ankle pivots, rivets and fastener loops are made from stainless steel.

They have a few flaws yet, despite the extensive testing and prototyping. First they don't feel like normal leather boots. In fact much of the feel is gone when wearing them. Scott's booklet fully explains how to fit the boots and warns, "they are different, give yourself some time to get used to them before you try to set a hot lap at your favorite track."

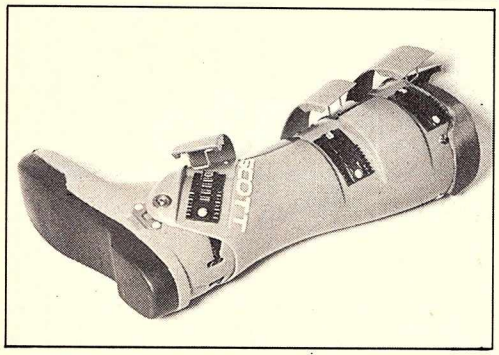
The time it takes to get used to the Scotts varies with the individual. Some people adapt within a few hours, some a few days. Strangely, the feel through the top of the ribbed left boot (the ribs are to prevent slipping on the shift lever) is better than through the soles. Stalled engines and missed shifts are common until a rider adapts. Even then an occasional downshift may be missed in wet riding as the rubber soles are very slippery against a wet shift lever rubber.

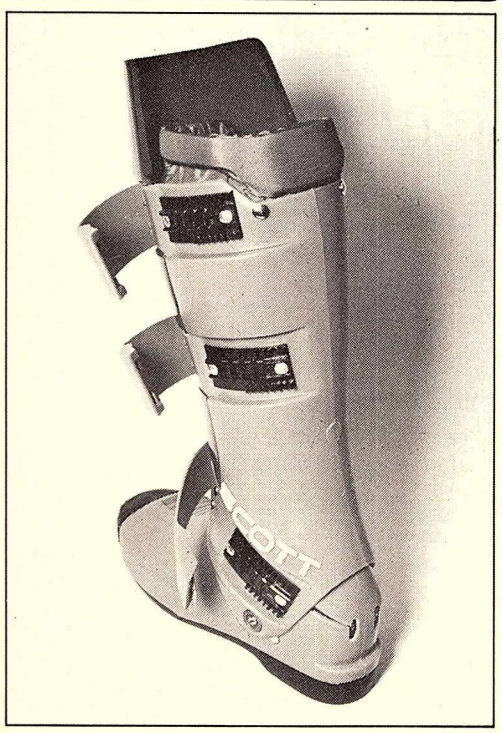
The person who wears a size 10 won't notice much exterior size difference, but one who wears a size 7 or 8 will feel like his feet have suddenly grown several sizes since the shell is the same size as a 10.

The plastic uppers on the Scotts have an abrasive effect on most motorcycle side number plates.

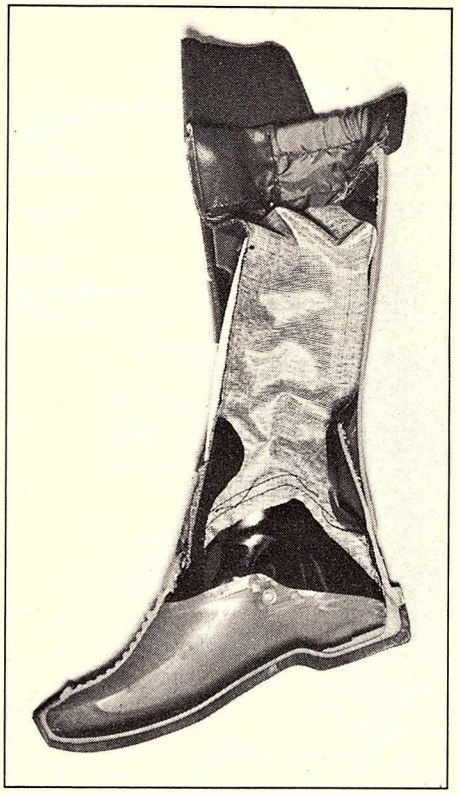
Next on the list of complaints is heat.>

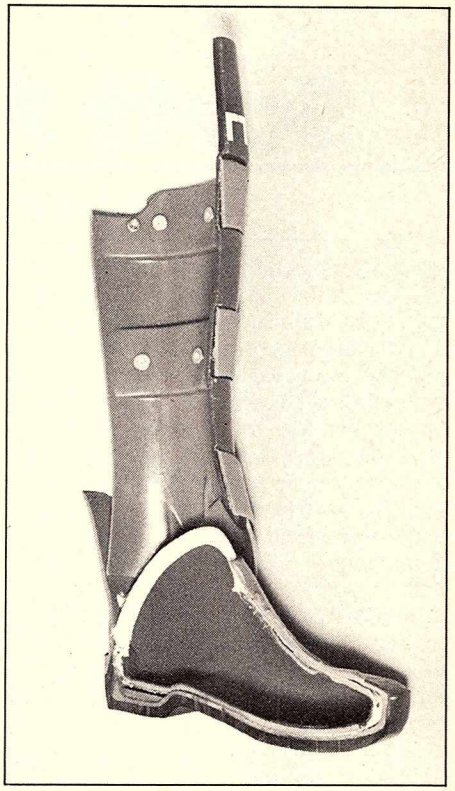
Photos by Ron Griewe



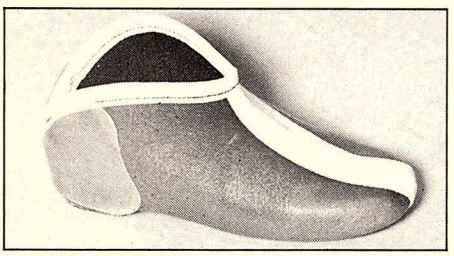


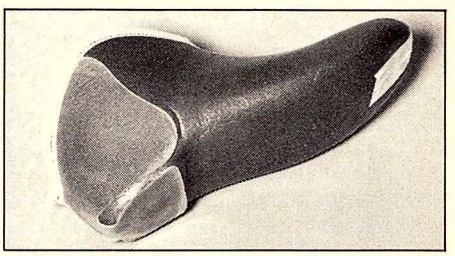
Strap closures are an integral, non-protrusive part of the boot.





Cutaways of the Scott boot show the waterproof upper liner and the sizing bootie in the lower.





Sizing booties cut inventory at retail outlets and a growing person can let his boots grow with him.

They don't breath like cowhide and the accumulated perspiration can't escape. Thus their waterproof claim almost works against them. Might as well be wet from creek water as sweat. After a hard day's ride in hot weather, it is possible to accumulate about a half pint of water in each boot. We've considered drilling a couple of drain holes in each boot to let the trapped perspiration out!

Repair is the next problem. Although Scott sells a dealer repair kit to cover buckle parts and minor problems, sole replacement requires shipping them back to Scott's service center. Turn around time is claimed to be only two weeks. Even so, a rider could be forced to dig out his old leather jobs until the plastics are returned. Luckily repair shouldn't be required often. We had a major problem with one pair of ours. The right boot broke in the instep area from kick starting a 450 Maico. The one that broke was an early production pair and Scott has since increased the plastic thickness in this area of the boot. We pulled the nylon liner loose from the lower shell on the same pair, but we feel this was caused from carrying the boots by the liners. Our fault, not the boots.

So much for the negative aspects. Now the good stuff.

Probably the biggest reason for wearing boots while riding motorcycles is the protection they provide. And the Scott boots provide the wearer with superior protection, in our opinion. The sole is shaped and rounded so it glides over the ground instead of catching on it and kicking your foot back. The polyurethane lower is nearly crush-proof and comparable to encasing your foot in a plastic cast. And the upper is nearly as strong. If a hard blow, such as a thrown rock or crashed bike, contacts the Scott boot, the force of the blow is spread across a wide area of the boot and thus partially absorbed. The plastic doesn't dent like leather and most encounters with objects go almost unnoticed. The thick foam sizing liner further isolates the wearer's foot from harm and furnishes a snug, comfortable fit.

Most riders notice a big difference in shock transmitted back through the foot pegs when wearing Scotts. It is especially noticeable over large jumps. The boot shell spreads the load over the whole bottom of the boot, eliminating the sharp blow to the instep.

Forget the messy oiling and waterproofing leather requires. Just hose the mud and dirt off, and hang them up to dry. If you are in a hurry, remove the bootie so it can dry quicker. After they dry, squirt a little Armor All or other comparable chemical on them. The plastic will never get waterlogged or deteriorate from water exposure. Theoretically one pair of Scott boots should last almost indefinitely with minimal care and repair. One of our original pair has been worn by a pro motocrosser for six months with zero repair.

With a retail price of $180, they aren't cheap. Not initially anyway. But over a period of a couple of years a rider could come out way ahead. With some leather boots going for $130, and needing replacement up to three times a year at the pro motocross level, the Scotts start sounding like a bargain. We have used our plastic Scotts for six months now and the test riders wouldn't be without them. ⊠

THE HONDA CLASSICS. A NEW CHAPTER BEGINS.

THIS CLASSIC BECOM

THE CB750K.

February 1969. The International Motorcycle Show. Gleaming in the spotlight, a revolution, a masterpiece in motorcycles. The crowds gape. The critics stare. A 750. Four cylinders. Four pipes. For the new generation of riders.

From Honda.

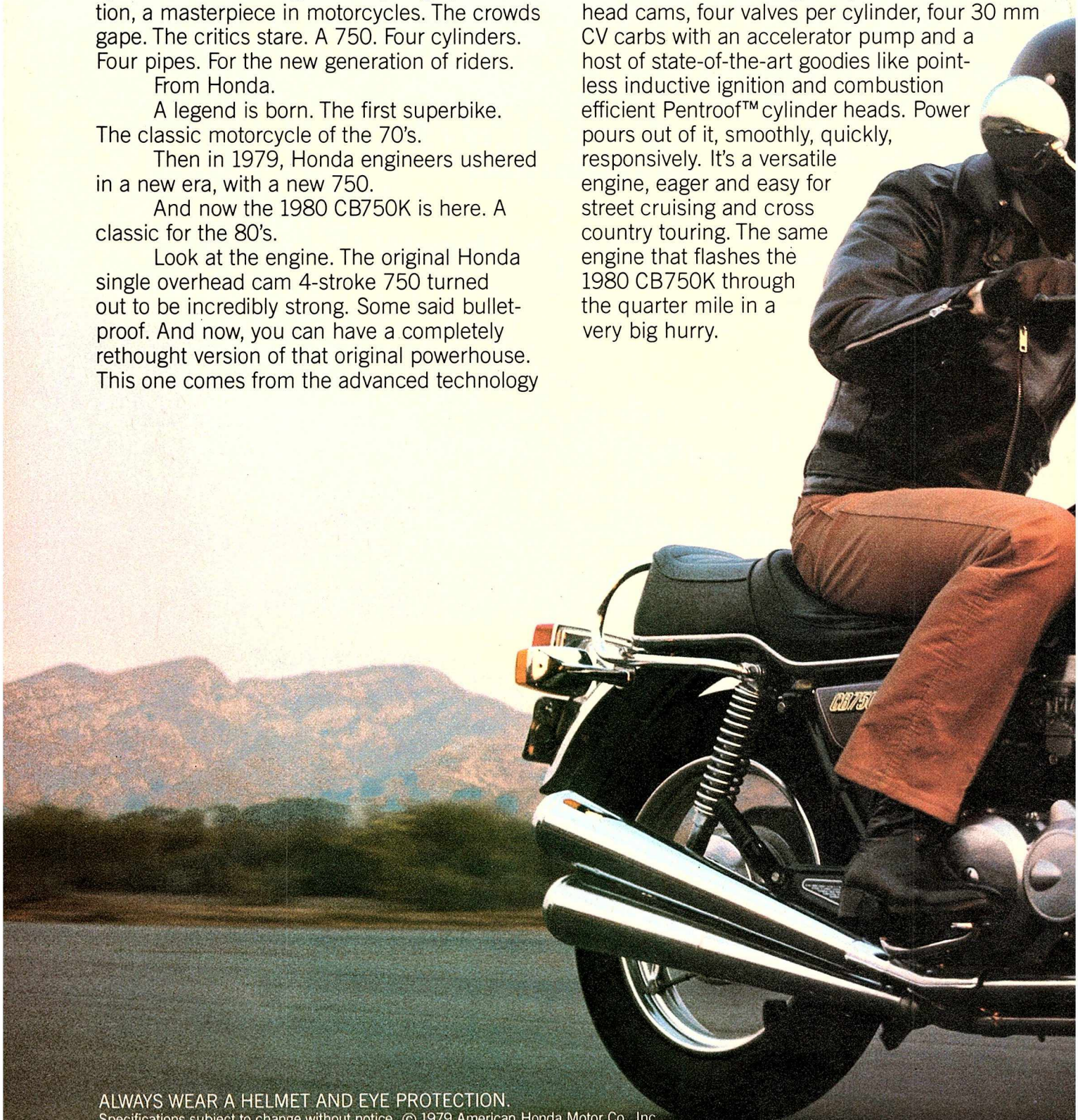
A legend is born. The first superbike. The classic motorcycle of the 70's.

Then in 1979, Honda engineers ushered in a new era, with a new 750.

And now the 1980 CB750K is here. A classic for the 80's.

Look at the engine. The original Honda single overhead cam 4-stroke 750 turned out to be incredibly strong. Some said bullet-proof. And now, you can have a completely rethought version of that original powerhouse. This one comes from the advanced technology Honda developed for the RCB racers; those incredible machines that dominated European endurance racing for three years in a row.

The CB750K engine sports double overhead cams, four valves per cylinder, four 30 mm CV carbs with an accelerator pump and a host of state-of-the-art goodies like pointless inductive ignition and combustion efficient Pentroof™ cylinder heads. Power pours out of it, smoothly, quickly, responsively. It's a versatile engine, eager and easy for street cruising and cross country touring. The same engine that flashes the 1980 CB750K through the quarter mile in a very big hurry.



ALWAYS WEAR A HELMET AND EYE PROTECTION.

Specifications subject to change without notice. © 1979 American Honda Motor Co., Inc.

For a free brochure, see your Honda Dealer. Or write: American Honda Motor Co., Inc. Dept. 21294, Box 50, Gardena, California 90247.

ES A ROCKET.

In the handling department, this new motorcycle shows a decade of change as well. A sturdy double-cradle frame, needle bearing swing arm pivot, smooth front forks, and Honda's two-stage rear shocks with five spring preload settings put you in control of an agile machine that responds. Truly responds. To take you through two-lane twisties to broad, sweeping interstates. And the thoughtfully contoured plush saddle means you'll ride comfortably, as well as quickly.

Rider convenience has been carefully considered. The new CB750K's instrument panel speaks at a glance. A pushbutton handles tripmeter resets. Not far away is the choke control, fuse box and integrated ignition/fork lock. Honda's had the foresight to help your hindsight with exclusive-design vibration-resistant mirrors.

A LEGEND IN THE MAKING.

And so, while the original Honda 750 set all the standards for superbike performance, the new CB750K seems to be setting them again. Comfort. Speed. Handling. Performance. Reliability. And the deep, sweet sound of the now familiar Honda four pipes.

A contemporary classic is yours for the riding. The 1980 Honda CB750K.

HONDA

FOLLOW THE LEADER.

THIS CLASSIC BECOM

THE CB650.

Even at rest it seems alive. Poised. Shimmering. Bristling with an aura of two-wheeled greatness—past, present, and still to come. A classic.

Classic simplicity. Classic proportions. Classic teardrop tank and striping. Wherever you roll, the 1980 CB650 singles you out as a rider with a sharply defined taste for traditional elegance—as well as arm-straightening performance.

One look tells the story. And that's precisely why the new CB650 will always rate more than just one look. It's got a combination of grace, gloss and guts that compels the eye. Any eye. Anywhere. Whether you're stylin' down the boulevard or unwinding some mountain road.

But they better look quick, or you'll be outtasight. The CB650's sleek, traditional styling is matched to another great tradition, one that we started—the overhead cam 4-stroke, 4-cylinder engine. An up-to-the-minute refinement of the famous Honda fours that opened new frontiers with their breath-taking performance and rock-like reliability.

At 627 cc this Honda four pumps out the same kind of smooth, potent go-power that changed the world of two wheels. Plenty of it. With four 26 mm carbs, for economical operation. An accelerator pump, for instant throttle response. And sure-firing pointless inductive ignition that never needs adjustment.

Match this power to a frame/suspension

ALWAYS WEAR A HELMET AND EYE PROTECTION.

Specifications subject to change without notice. © 1979 American Honda Motor Co., Inc.

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ES A KNOCKOUT.

package that's a lot lighter than its nearest four-cylinder competition, and you've got a new dimension in middleweight street quick. Thanks to a knockout power to weight ratio.

FEEL THE DIFFERENCE.

But stoplight-to-stoplight is only part of it. Take the CB650 out on your favorite stretch of back road and see how the rigid double-cradle frame, low-stiction forks, and two-stage shocks help you unkink the twisties. The engine is narrow, to give you outstanding cornering clearance. And there's plenty of stopping power—with a powerful front disc brake and big rear drum—to match the go.

Now tackle the interstate, and feel how suspension and a stylish stepped saddle combine to isolate you from the myriad jolts and bumps of freeway riding. It won't take you long to realize that smooth isn't confined to the CB650's classic good looks.

But the essential quality common to all true classics is that they stand the test of time. That's what makes this Honda a classic, well beneath its meticulous finish. And well beyond the ordinary run of middleweight street machinery.

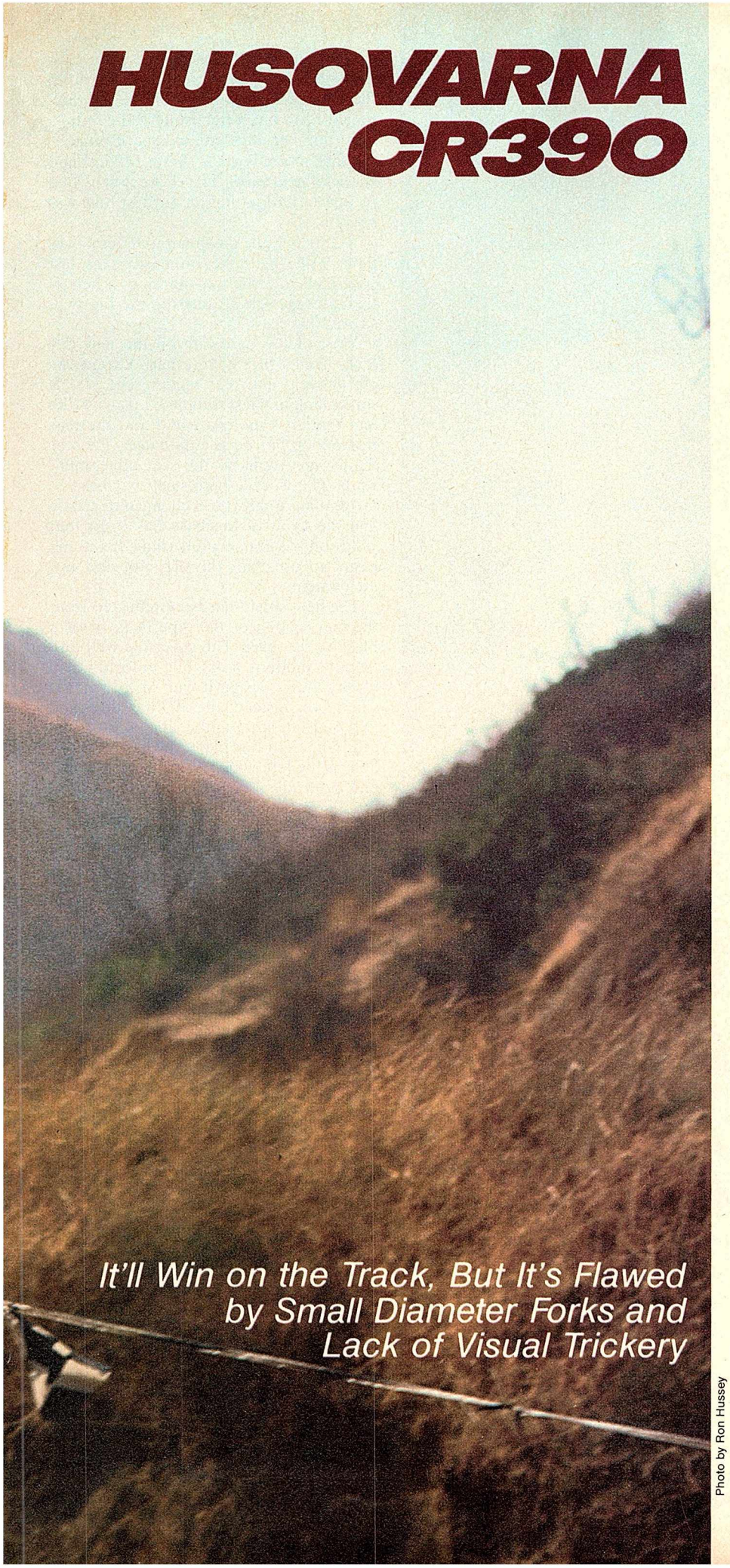
Think of the Honda CB650 as an uncommonly traditional classic. As uncommon, in fact, as the men who ride it.

HONDA

FOLLOW THE LEADER.

BELL
CYCLE WORLD
CYCLE WORLD
390

HUSQVARNA CR390



It'll Win on the Track, But It's Flawed by Small Diameter Forks and Lack of Visual Trickery

Photo by Ron Hussey

CYCLE WORLD TEST

■ Husqvarna made major changes to the frames of their motocross and off-road/enduro bikes last year. Refinement of that design is Husqvarna's theme for the 1980 models.

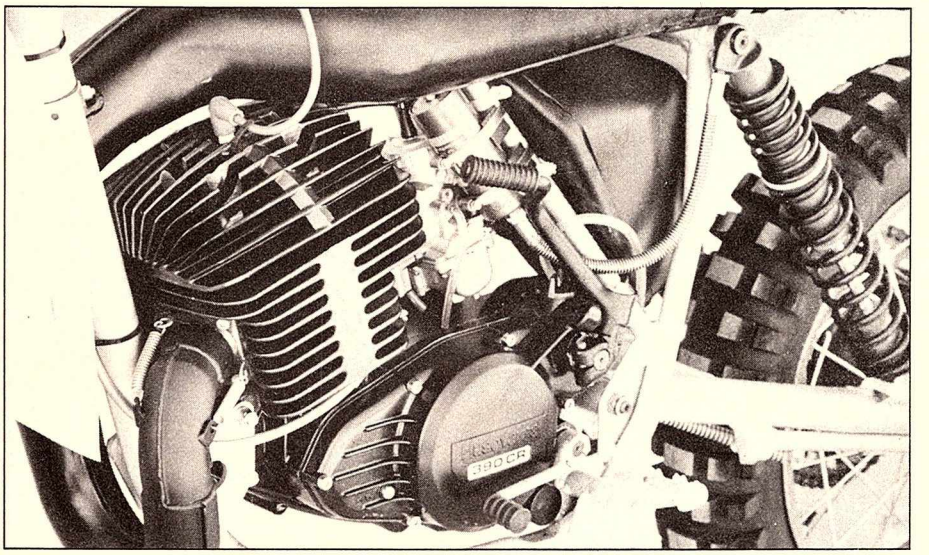
A larger displacement open class engine was rumored but didn't appear. Our test bike is a 390 with 5mm larger transmission shafts (25mm in 1980 vs. 20mm in 1979). The larger size extends the full length of the shafts, greatly increasing strength, and requires counter shaft sprockets with larger centers—so Husqvarna thoughtfully supplies a selection of sprockets with each new bike. The counter shaft sprockets themselves are held on the splined shaft with a light and simple snap ring, making gear swapping easy. The centercase castings are thicker and transmission gears are also new. Ratios are the same as last year but the centers are larger to fit the larger shafts and different splining. Additionally, the four engagement dogs (there were five previously) have been made bigger and deeper. Fewer engagement dogs make gear lock-up quicker, resulting in faster shifts with less effort. The larger and deeper dogs are stronger and, combined with the larger transmission shafts, should eliminate Husky's past problem with broken gears and shafts.

The thicker center case castings are stronger and an additional web beefs up the area behind and below the cylinder. We hoped the new cases meant primary kick starting had finally been added, but no such luck. Searching for neutral to restart a stalled engine is still required, and Husky gets the award for the weirdest shaped kick starter again this year. Some problems with bending have been experienced in the past, so the '80 has been redesigned but the strange shape stays. In all fairness, it does the job it was designed to do—start the engine. It gives good leverage and the starter's foot doesn't hit the foot peg. Even a lightweight can kick over an open class Husky.

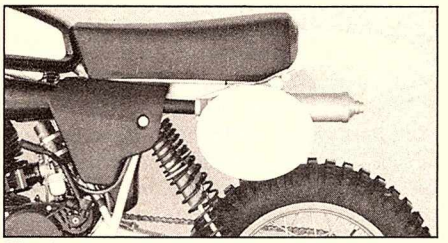
Primary drive is by straight-cut gear as Husky two-strokes have always been and their distinctive whine can sometimes be heard before the exhaust blast. Rubber pads are built into the back of the clutch hub to cancel shock to the transmission and multi-plate clutch, and clutch pull is smooth and light.

Ignition is by Motoplat and a lighting coil is furnished in case the owner decides to use the big Husky for a play or enduro bike.

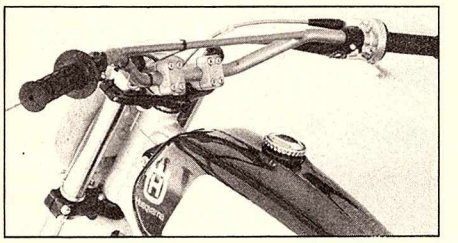
The 384cc powerplant has an 83mm bore and 71mm stroke. The cylinder liner is iron and Husky stocks Mahle single ring pistons in three over-bore sizes. Cylinder porting is the same as last year but quality control at the casting plant and more careful final aligning results in a broader and smoother power band. Cylinder fins have a>



Husky's 390 engine is smooth and strong. Both transmission shafts have been increased 5mm in diameter and the gears have larger, stronger engagement dogs.



Plastic side cover replaces the heat shield of 1979. Seat is reshaped, rear frame loop eliminated and new rear fender for 1980.



Handlebars are rubber mounted and shaped right. Control cables route neatly behind the number plate.

cast-in bar that ties the fins together for strength so engine vibration won't cause them to crack and break off. The radially-finned head has a hemispherical combustion chamber and centered spark plug.

Carburetion is via a 38mm Mikuni and six-petal reed valve. The choke is activated by a lever and jetting on our test bike was spot on.

A single wall, down around and over pipe, with the same dimensions as last year, ends in a silencer that does a better-than-average job of quieting the big two-stroke's bark.

Most of the hardware on the new CR looks like its 1979 counterpart. Exceptions are the seat and rear fender. The seat is squared off and less rounded. Likewise, the rear fender is more squared and the rear frame loop has been eliminated—the rear fender now bolts to the seat attachment strap. The troublesome steel seat base of the past has finally been changed to plastic and the front of the base has a slit that slides onto a frame protrusion. It's much easier to use than the old bolt and nut attachment.

The heat shield has been removed from the rear section of the pipe in favor of a plastic side cover. The cover fits well and lends a modern look, but unfortunately Husky didn't design it with an FIM-legal side plate. Instead, the 390 has the same flat, bolt-on side number plates used last year. The right side plate isn't as objectionable as the left, which bolts to the silencer, and protrudes several inches. Heat from the silencer quickly burned a large hole in the front of the plate, which then fell off. After losing two left side plates we put the third one on with rubber grommets between the muffler and plastic plate. That solved the problem but a quality bike like the CR deserves better, integral number plates.

A beautiful 2.2 gal. aluminum fuel tank with unpainted sides looks like Husky tanks of last year, but fuel capacity has been increased slightly, and the rear strap mount—the one that used to cut the front of the seat cover—has been replaced with a strap that hooks around the frame below the rear of the tank. The gas cap is the same one used by Husky since the beginning of time. It looks nice, but only one in 10 seals right. Our test machine had one of the worst we have encountered. It leaked profusely. We replaced it with a Petty cap and cured the problem. No big thing, just one that has gone on for too long.

Husqvarna introduced a new super-strong Swedish chrome-moly frame last year and the same frame is used in 1980, the only change being removal of the rear frame loop. It is a large single down-tube design with two large backbone tubes. Triangulation under the seat is good and the design allows for a real airbox, a first for Husky last year. The air cleaner is made from a quality foam, and removing or replacing it takes only a few seconds. The only problem with the design is the>

$78.71

BELL HELMETS

MEETS SNELL 75, D.O.T. AND A.N.S.I. SAFETY STANDARDS

Star II

Constructed of aircraft quality fiberglass shell and expanded polystyrene foam liner. Specially designed nylon-covered padding provides a comfortable positive-fit helmet position for additional safety.

The Star II is ideal for wearers of eye glasses and the new super tough .060 thick acetate shield which comes with the helmet adds extra protection against flying rocks and debris.

Available in Standard White, Jet Black, International Orange or Yellow color.

"NEP" CRUISE CONTROL

Reduce throttle hand strain and fatigue with a NEP cruise control. No grip change, installs in minutes, (wrench and easy to follow instructions enclosed). Strong, made of DuPont ZYTEL ®ST nylon. Models available for dual throttle cable and single cable motorcycles.

78-0022 Cruise Control, Dual Cable Throttle
*78-0023 Cruise Control, Single Cable Throttle

9.95

$69.95

"PRESTOLITE" ELECTRONIC IGNITION

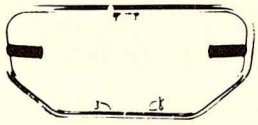
The last tune-up kit your road machine will ever need. Custom engineered to provide faster starts, maintenance free operation and fuel economy. Replaces existing components, no "black-box" add-on.

Part No.	Application
4038	Fits 350, 400, 500, 550 and 750 cc four cylinder Honda models
4039	Fits 450, 500cc twins and GL-1000 Honda models
4041	Fits Harley-Davidson Sportster and "74" models. All years.
4043	Fits 900 and 1000cc four cylinder Kawasaki models.

CHROME FRONT SAFETY BARS COMPLETE WITH FOOTRESTS

Heavy Duty, 1 1/4" Dia. Tubular Steel Front Safety Bars Complete with Rigid Foot Rests.

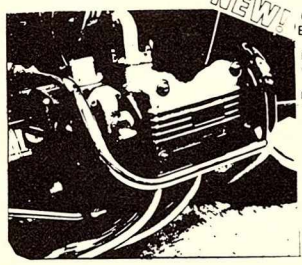
Part No.	Fits
0037	CB-750 (K Series) Honda
0039	CB-450, CB-500T Honda
0040	CB-350F, CB-400F Honda
0041	CB-550, CB-550F Honda
0079	CB-400A, T1, T2 Honda
0042	TX-500 Yamaha
0043	TX-650 Yamaha
0058	KZ-400 Kawasaki



$21.55

NEW!

CONNECTICUT CYCLE ENGINE CASE GUARDS



Perfect fitting chrome engine case guards for Honda GL-1000 gold wing models.

Part No.	Ref. No.	
0284	71200	Honda GL-1000, 1975/78

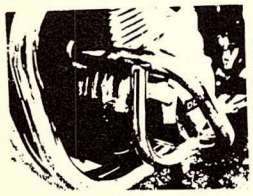
$44.95

2.59

FLAT PROOF

After extensive field testing, "Flat Proof" tire sealant has been proven to eliminate tire failures due to punctures. Odorless, non-toxic, non-flammable, this sealant instantly provides a safe, simple seal for punctures up to 1/8" in diameter. Applied directly into tire through the valve stem. Will not affect wheel balance.

0008 Flat Proof, per 8 oz. bottle



Deluxe Rail

DELUXE DUAL RAIL TYPE

0258	Honda GL-1000
0168	Honda CB-750F, CB-750-K Series 1969/78
0169	Honda CB-550F, CB550-K Series
0170	Honda CB-350F, CB-400F
0171	Kawasaki Z-1, KZ-1000
0227	Kawasaki KZ-650
0256	Suzuki GS-400
0254	Suzuki GS-550
0229	Suzuki GS-750

24.50

BLACK CUSTOM SEATS — SMC/ACU-WELD NO BACK CUSTOM SEATS

NEW!

0083	H-D Sportster thru early 1978
0084	750K Honda 1977/78
0085	750K Honda 1969/76
0086	CB400A, T1, T2, Honda
0087	KZ900, 1000 Kawasaki
0088	KZ 650 Kawasaki
0089	KZ400 Kawasaki
0090	GS 750/550 Suzuki
0091	GS 1000 Suzuki
0092	XS 750 Yamaha
0093	XS 650 Yamaha

65.00

0016 Redi-tie, steel tie down holders. Expandable core, sure grip, eliminates welding. Installs in seconds, into truck rack stack pockets. Each

5.50

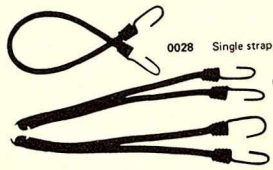
TIE DOWN STRAPS

0004 Easily attached, heavy duty, 2" x 6 ft., nylon tie-down straps with rugged aircraft steel hooks. Adjustable tension, quick release buckles. Per pair

9.90

BUNGEE CORDS

High quality 3/8" diameter elastic bungee cords. Steel capped ends—extra strong plastic covered hooks.



0028 Single strap, 18" long **1.00**

0027 2 x 24, four hook (really four 12" cords joined in center) **1.95**

NEW!

STAR-BRITE PROTECTOR

Star-Brite Protector puts new life into hard and soft plastics, rubber and vinyl. It fights weathering, discoloration, fading, drying out and cracking. Long lasting, one application lasts for months. Economical, approximately 50 complete cycle applications from every bottle. Easy to apply, just wipe on.

0072 Star-Brite Protector 8 oz bottles

3.25

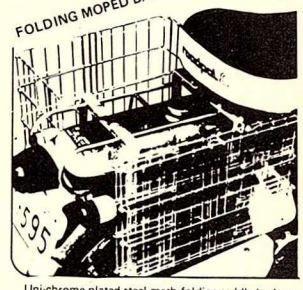
CONNECTICUT CYCLE TANK BAG

The perfect complement for the CCA tote bag when extra storage is necessary. Attaches in seconds, fits any tank with protruding filler cap. Comes with clear vinyl pouch for maps and directions, plus special sleeve for mounting on tube type sissy bars.

Part No.	Ref. No.	
0036	20010	Tank Bag

29.90

FOLDING MOPED BASKETS



Uni-chrome plated steel mesh folding saddle baskets, 13½" x 6¾" x 9" deep. Ideal for moped use.

Part No. Folding Moped Basket with Mounting Clamps

21.88

STAR-BRITE CYCLE POLISH

A remarkable new formula polish, first developed for high speed aircraft. Cleans and polishes in one easy step. Fairings and gas tanks wipe to mirror brilliance. Chrome glitters with diamond-hard protection. Removes surface rust and oxidation and helps prevent their return. Makes colors emerge rich and lustrous from painted surfaces. Uneffected by gas or oil spills. No hard rubbing necessary, just wipe on, let dry, wipe off. Contains no waxes or lacquers.

0070 Star-Brite Cycle Polish 8 oz bottles

2.95

ONE PIECE DRY RIDER RAIN SUITS

Polyurethane on 200 Denier Nylon material, the one piece Dry Rider rain suit is 100% water proof, while offering excellent wind and tear resistance.

Expert tailoring features include: Ragland type sleeves, elastic "take-up" band in rear waist, comfortable corduroylined collar, VELCRO® closures, chest pocket, waterproof side slits allowing wearer to reach front or rear pockets, full front zipper and double storm flaps.

Availabe in yellow only.

2230 Small Rain Suit
2231 Medium Rain Suit
2232 Large Rain Suit
2233 Ex-Large Rain Suit

44.88

"CLYMER" MOTORCYCLE MANUALS

ALL MODELS
PLEASE SPECIFY

7.40

NEW!

RAIN WEAR

TWO PIECE PVC RAIN SUIT

Light weight water proof rain suit designed for the active cyclist. Electro-thermo welded seams to insure the ultimate protection against foul weather.

Jacket Features: Standup collar, outside Velcro® closure storm flap, zipper front. Adjustable wrists and draw string waist.

Pants Features: Elastic waist, ankle closures and elastic boot straps.

Supplied with matching carry bag.

Part No.	Size	Color
2222	Small	Yellow Rain Suit
2223	Medium	Yellow Rain Suit
2224	Large	Yellow Rain Suit
2225	Ex-Large	Yellow Rain Suit
2226	Small	Orange Rain Suit
2227	Medium	Orange Rain Suit
2228	Large	Orange Rain Suit
2229	Ex-Large	Orange Rain Suit

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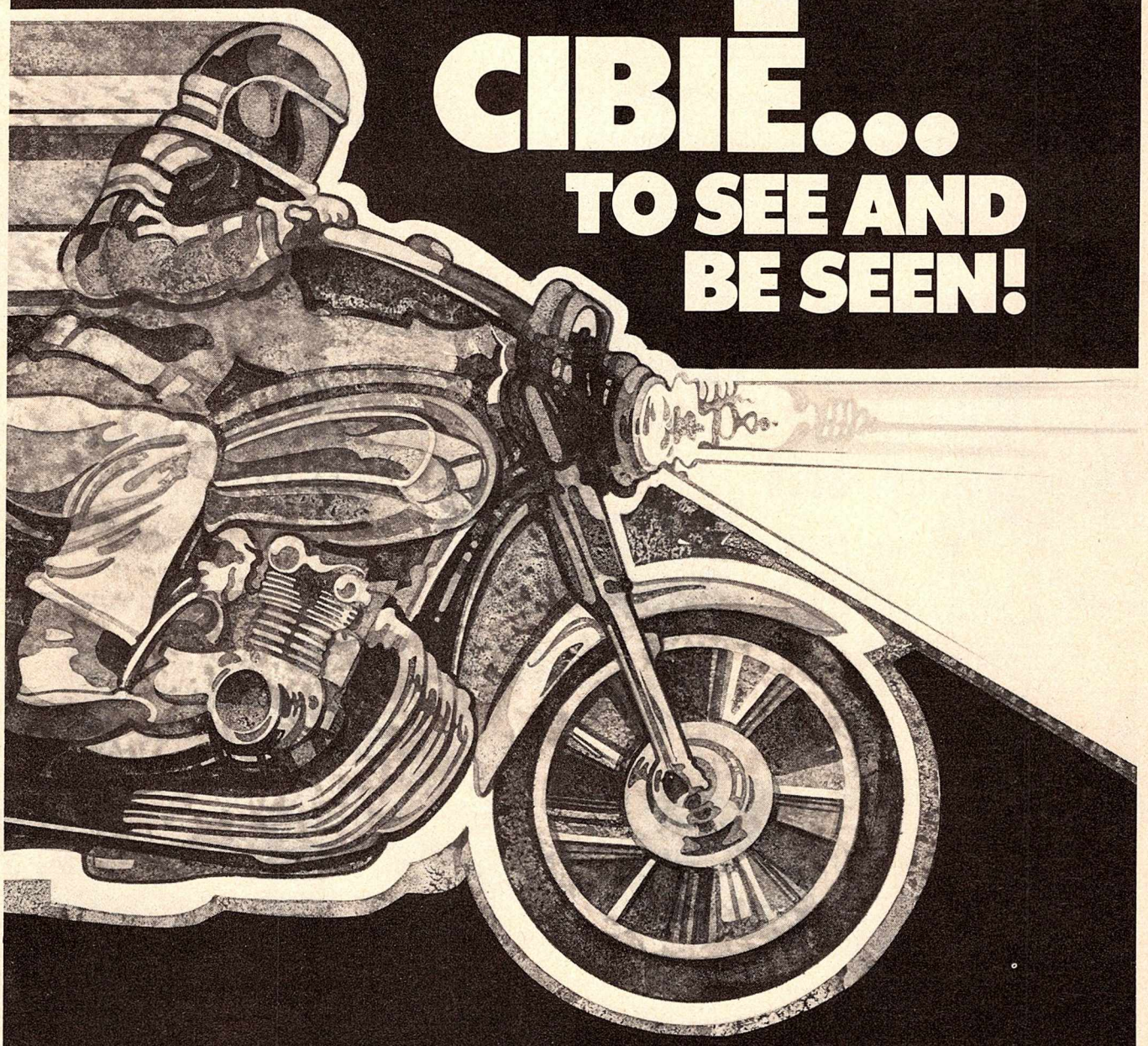

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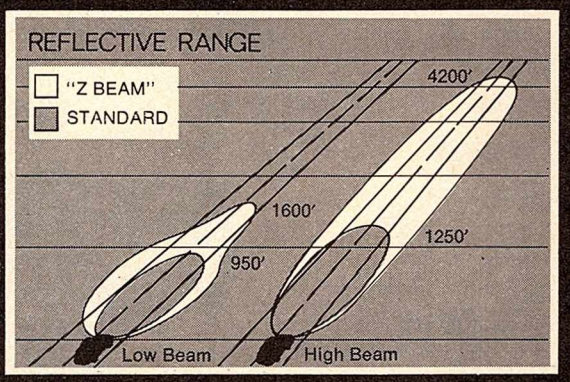

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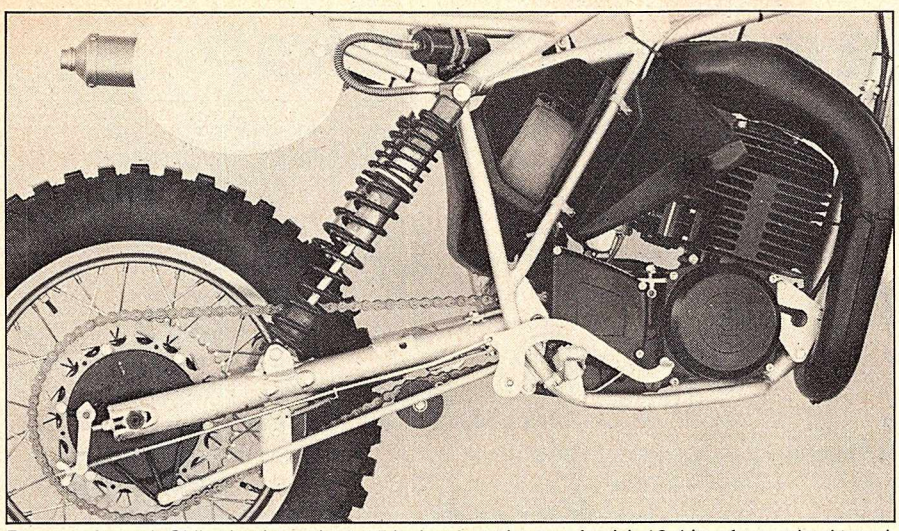
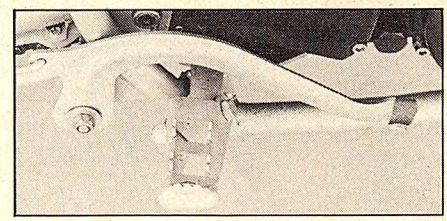
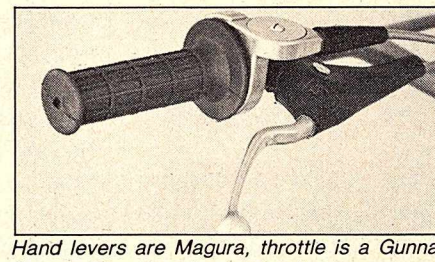


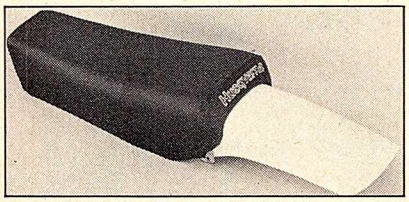
Remote reservoir Ohlin shocks and a 1.25 in. longer swing arm furnish 12.4 in. of rear wheel travel.

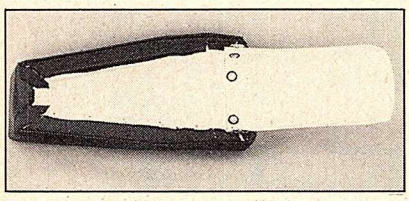


Brake pedal and foot pegs are the same as before.

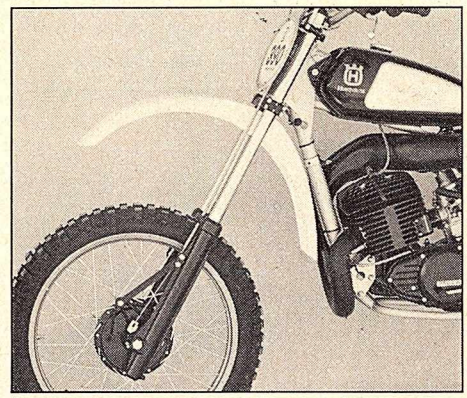


Hand levers are Magura, throttle is a Gunnar Gasser. Even the grips are good.

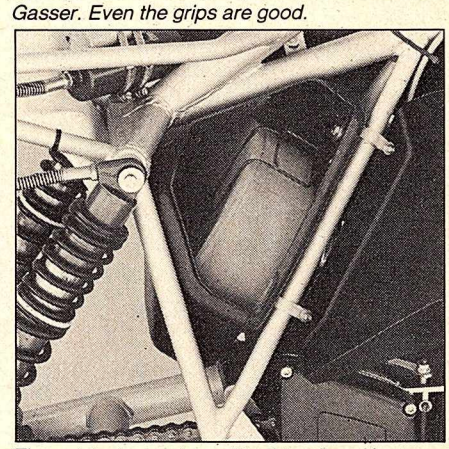




Seat is all-new from the plastic seat base up. Shape is more square and the rear fender bolts to it.



Front forks still utilize 35mm stanchion tubes. Lower legs have 1 in. more engagement. Spring rate and damping are perfect.



The quick change foam filter introduced last year remains.

lack of a drain in the bottom of the box. Repeated water crossings, or one deep crossing, will fill the box until the water is drawn through the foam filter. Overlooking such an important function of the airbox on a first year design is excusable; on a second year production run, it isn't.

Husqvarna is one of the few companies that hasn't changed their swing arm material to aluminum. It remains oval shaped chrome-moly steel. For 1980 the straight swing arm has been lengthened 1.25 in.

The rest of the running gear hasn't changed much. Wheels are still 21 in. front and 17 in. rear. Hubs are virtually the same. Brakes and backing plates, ditto. A new waterproof rear backing plate was rumored but didn't make it this year. Wheel rims are still the deep center jobs from Finland. Last year a problem arose from improperly prepared rim surfaces and the gold paint flaked from some rims. Husqvarna offered a deal on replacements to owners of affected bikes, though. Now that the paint is applied at their Husqvarna factory, the problem is said to be cured. Spokes and spoke nipples are the same as before, but higher quality materials are used and an old problem with isolated breakage is solved. As proof, we raced and won the open pro class at several local motocrosses, and the spokes didn't loosen once.

Tires are Trelleborgs. The rear works well on a variety of terrain, the front is best changed to something else.

Chain tension is taken care of by a large, spring-loaded roller. After using one of the best non-moving tensioners on any bike, Husky has taken a step backward to a spring loaded unit. We didn't have any trouble with it and it has a heavy spring and good roller, but last year's design was superior.

Suspension action is first class on the CR. Remote reservoir, dual spring, Ohlins and the longer swing arm produce 12.4 in. of perfect rear wheel travel.

Husqvarna-made forks are used on the front of the open class stormer. Travel is 11.8 in. and like the rear, damping and spring rate are flawless. The stanchion tube material is the best Swedish chrome-moly tubing available. The lower fork legs are pressure cast from magnesium and give an inch more stanchion tube engagement than last year. These minor changes have cured the rubbery, flexie feel the '79 forks had. The bike goes exactly where pointed but the feedback through the bars isn't nearly as strong as it is on bikes that use larger diameter tubes. The 35mm stanchion tubes look too small for the big motocrosser and they are. The forks held up well until one of our pro testers entered a local stadium event. After the race, the big Husky had a chopper look. The fork tubes had bent forward just below the lower triple tree. The bending had stretched the wheelbase 1.5 in. Small diameter stanchion tubes were fine when forks had 6 in. of travel, with 12 in. they need to be much larger.

Husqvarna isn't convinced larger tubes are better, but most other motorcycle manufacturers are. Suzuki uses 38mm stanchion tubes on their RM125 and the 1980 Maicos are supposed to come with 42mm tubes. We can't help but wonder how much better the big Husky would be with 40 or 42mm stanchions.

Suspension compliance at both ends is perfect. Small ripples and bumps go unnoticed. Large whoops, ditches, ledges and gulleys can be taken faster than most riders are capable of riding. Neither end kicks or jolts the rider and bottoming is very unusual.

The longer swing arm helps keep the front wheel on the ground during starts but it can still be lofted at will with a quick blip of the throttle. The longer wheelbase and stronger forks have eliminated the "front wheel flexed or lifted over the berm" problem the '79 390 CRs had. The front wheel stays in the groove and the rear follows, as it should. The longer swing arm has stretched the wheel base to almost 60 in. Steering rake has stayed 30.5°. Even so, the big bore Husky turns well. It can be pitched into a tight first gear hairpin with minimum effort or run wide open in sixth>

HUSQVARNA CR390

SPECIFICATIONS

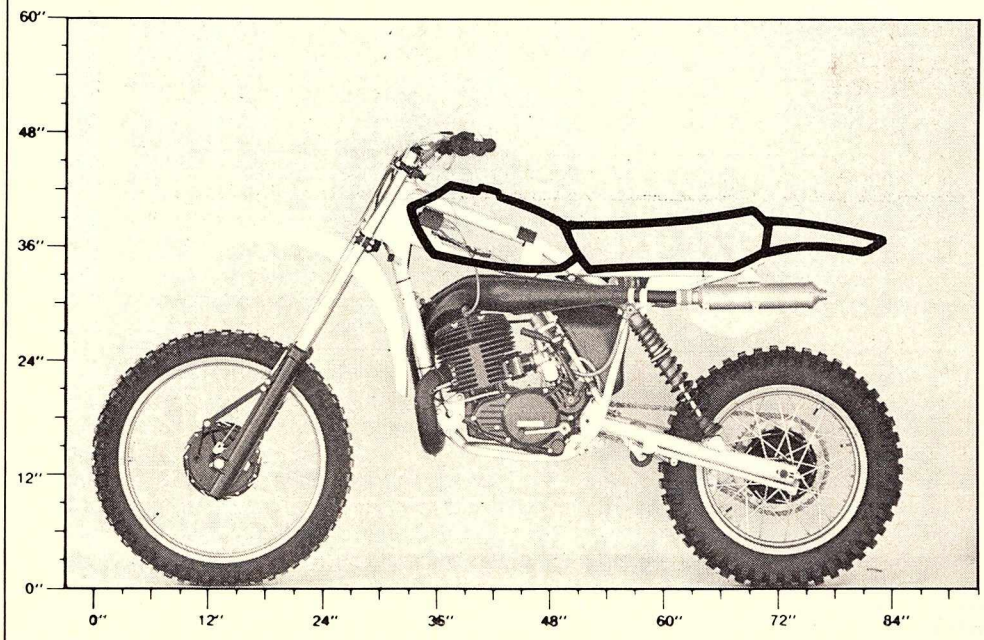
List price	n/a
Fork travel	11.8 in.
Fork stanchion tube diameter	35mm
Rear wheel travel	12.4 in.
Front tire	3.50-21 Trelleborg
Rear tire	5.00-17 Trelleborg
Engine	two-stroke Single
Bore x stroke	83 x 71mm
Piston displacement	384cc
Compression ratio	11.5:1
Claimed power	na
Claimed torque	na
Carburetion	38mm Mikuni
Ignition	Motoplat CDI
Lubication system	premix
Primary drive	straight-cut gear
Gear ratios, overall:1	
6th	7.19
5th	8.13
4th	9.64
3rd	12.01
2nd	15.76
1st	21.78
Oil capacity	2 pt.
Fuel capacity	2.2 gal.
Fuel tank material	aluminum
Swing arm material	chrome-moly steel
Starter	kick
Air filtration	oiled foam
Frame material	chrome-moly steel

DIMENSIONS

Wheelbase	59.7 in.
Seat height	38.3 in.
Seat width	6.5 in.
Seat length	20.7 in.
Seat front to steering stem center	15.5 in.
Handlebar width	34.0 in.
Footpeg height	16.4 in.
Footpeg to seat top	22.3 in.
Footpeg to shift lever center	5.8 in.
Footpeg to brake pedal center	5.3 in.
Swing arm length	21.7 in.
Swing arm pivot to drive sprocket center	3.2 in.
Gas tank filler hole size	1.6 in.
Ground clearance	13.3 in.
Fork rake angle	30.5°
Trail	6.0 in.
Test weight (w/half tank fuel)	244 lb.
Weight bias, front/rear percent	46/54

FEATURES

Forks adjustable with air?	yes
Rear shock damping adjustable?	yes, internally
Rear shocks rebuildable?	yes
Provision to check transmission oil level?	yes
Does owner's manual show how to disassemble complete engine?	no
Does pipe burn rider?	yes
Brake pedal height adjustable?	yes



over the roughest terrain with the same good manners.

The 390 Husqvarna engine has been refined into a beautiful powerplant. Power is smooth, abundant, responsive, and the power band starts at idle. Starts are almost always first kick once you're used to the oddly-shaped kick lever. Shifting is smooth, positive and easy. Gear ratios are perfect and the six-speed furnishes one for any situation.

Husky's have always had a tall, lean feel to them, and the newest is no exception. The seat height is a whopping 38.3 in. The narrow, lean look is further enhanced when looking down on the bike from the seating position. The new seat is more square, like most of the Japanese bikes, and the up-swoop at the rear is gone. The flatter, reshaped seat makes the rider feel more on top of the machine, a position preferred by most modern motocrossers.

Control layout is typically Husqvarna—perfect. The footpegs are placed in the right position, the brake pedal is under foot when needed, the bars are the correct height and width, Magura dog-leg hand levers work smoothly and the throttle is a Gunnar Gasser.

Riding a Husky is different from riding any other motocrosser. Hitting berms or sliding corners requires a more vertical attitude. The "drag the handlebar" style of riding isn't right on a Husky. It can be done, but the bike is more comfortable when upright. Huskies are also happy if the rider rides on the rear wheel much of the time. Wheelies are natural on a Husky, anyone can do them. When crossing ruts at an acute angle, the Husky doesn't try to follow the rut. Most bikes will drop the front wheel into the rut and give the rider a quick thrill, the Husky crosses them as if they weren't there.

Brakes on the CR are okay but not outstanding. The front is strong and progressive, the rear not nearly as good. The rear is full-floating and doesn't chatter, but it isn't as strong as many other open motocrossers. The rear is almost useless after an encounter with water, and dries slowly. A redesigned backing plate is overdue.

Our only other complaint is a pipe that burns the rider in hard lefthand corners. The larger tank on Husky's OR model keeps the rider's leg off the pipe but the small MX tank allows leg contact.

Husky's newest open motocrosser is competitive, as we proved by winning several local pro events with it. But its looks are somewhat dated.

The competition has aluminum swing arms, plastic trickery and single-shock rear suspensions. On the race track, the Husky may come out ahead, but on the dealer's showroom floor, it may not.

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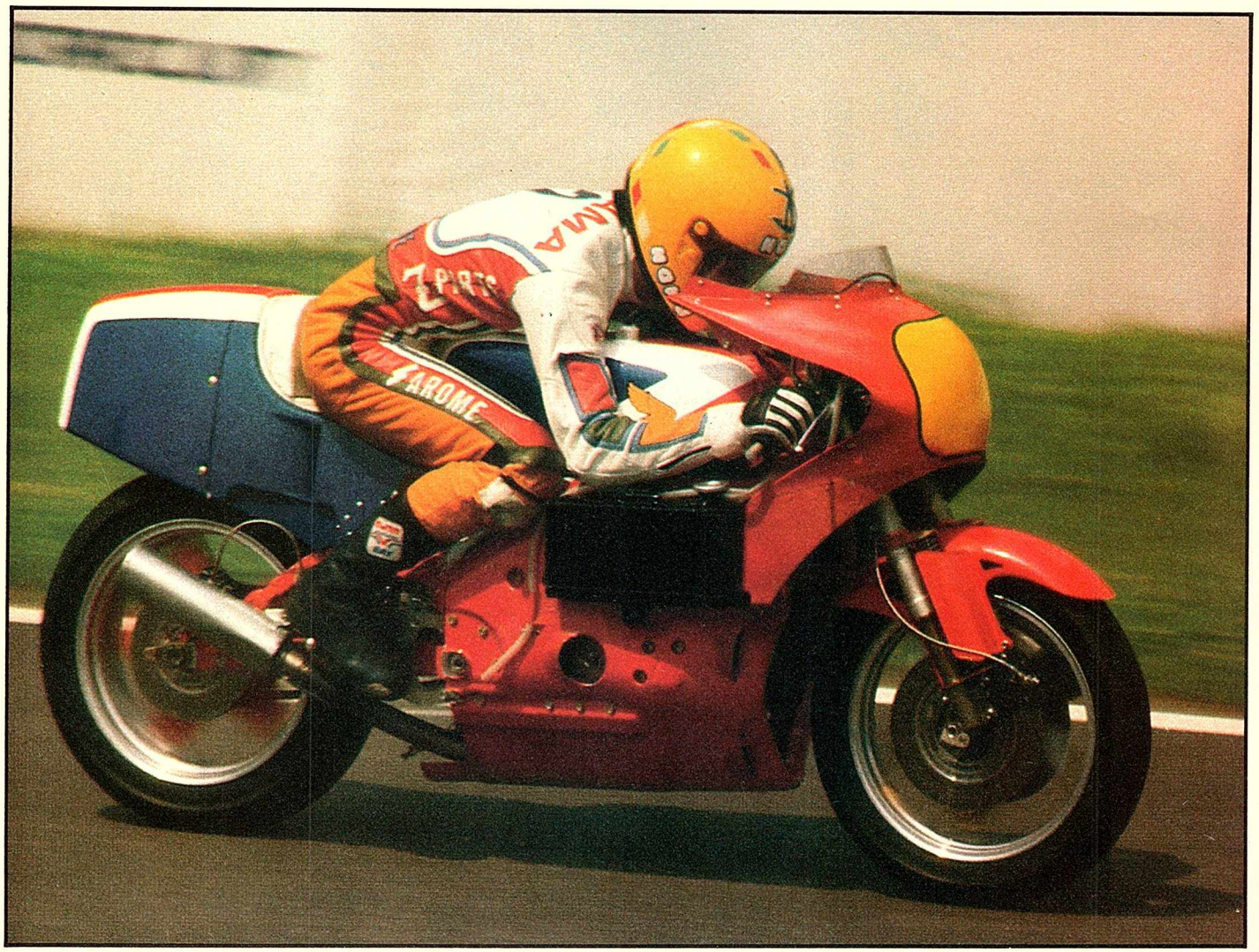


It's Honda vs. History Again, as the Radical Four-Stroke V-Four Makes Its Debut and Goes Down in Flames

by Allan Girdler

Last time this happened, we missed it. Then as now, world class road racing was conducted along clearly defined lines. There were two main groups; the English and the Italians, with occasional forays by the Germans. After experiments with exotic stuff like aerodynamics and supercharging, the rules were tightened and Grand Prix bikes became pretty much alike. There was a pattern, nobody had much of an advantage and everybody did what they did because that's how it was done.

In 1959, Honda arrived at the European road races. The bikes weren't like the other bikes. Hondas finished 6th, 7th, 8th and 11th in the 125 class at the Isle of Man and the experts said: Well, all that multiple-valve and multiple cylinder stuff was tried and rejected years ago.

In 1960 the Honda 125s finished the Isle of Man 6th, 7th, 8th, 9th and 10th. The experts said, Okay, Hondas are reliable, what else is new?

In 1961 Hondas finished 1st, 2nd, 3rd, 4th and 5th at the IoM in both 125 and 250, and went on to take both world titles.

The experts didn't say anything. Honda had done the impossible, so neatly and with such dispatch, that the press never got around to noticing what was being done, and how.

Here we are in 1979. There are two forces in road racing: Yamaha and Suzuki, with occasional efforts from Kawasaki. After experiments with Sixes and Eights and 12-speed gearboxes, the rules were tightened and Grand Prix bikes are pretty much alike. In the 500 class there are Yamahas and Suzukis, water-cooled four cylinder two-strokes, with multi-tube frames. Nobody has much of an advantage and everybody does it this way because that's how its done.

Except that Honda has come back. With a racer that isn't at all like the others.

Will history repeat? Will Honda roll up another umpty-six world titles?

Nobody knows.

What is clear is that this time we don't have to let the revolution go unreported.

Background. Honda's return to GP racing is a result of corporate decisions and policy. We'll never see the minutes of those meetings, so we'll have to guess at the reasons:

Honda is an engineering company, which isn't the same as being a manufacturing company or even being a motorcycle company.

Honda likes to knock the world on its keister by doing clever and technical things.

Honda likes four-strokes. Always has.

The important people at Honda were bright young men 20 years ago, they worked on the racing team and they enjoyed it.

Most of all, Honda goes its own way. They do what they think should be done

Photo Courtesy S. Hashimoto

and the devil take how other people do it, or what other people say.

All of which adds up to the meeting that must have taken place several years ago, at which the VIPs decided to get back into racing, with a four-stroke 500.

We heard rumors first, about all sorts of odd tricks, about millions of dollars spent, breakthroughs achieved. Then the machine was shown to the press, but not ridden. Then it ran a few easy laps in public.

The real race debut, though, was scheduled for the British Grand Prix, at Silverstone.

Friday morning, Silverstone. First day of practice and qualifying.

Outside the paddock fence there's a long, thin line. A row of people standing one behind the other, peering over shoulders and pointing cameras down a narrow alley between two motor homes. At the other end of the alley, the lights at the end of the tunnel as it were, Kenny Roberts and Kel Carruthers are in deep conversation.

Inside the paddock, in front of a pit wall, there's a knot of people. They're clustered in a tight circle. In the middle, smiling and bantering while posing with an endless supply of fans who are taking snapshots of each other, is Barry Sheene.

At the far end of pit row, behind the garage, is a huge striped tent. The largest crowd at the track is clumped outside the tent.

The tent flaps are tied shut. You can see nothing. Just the tent and the people.

Inside the tent is the Honda NR500. Every so often, but not often, during the day the mechanics will whip open the flaps. The NR (it stands for New Racer) will be rolled out of the tent, through the garage and onto the track, where riders Mick Grant or Takazumi Katayama will leap aboard and go for a lap or two. Then back down pit row, through the garage, into the tent and the flaps are secured before the mechanics begin whatever it is they're doing in there.

In terms of popular interest, the order is Honda, Roberts, Sheene.

Not by accident. This is a concerted, deliberate thing, this technical dance of the seven veils. A hint here, a sketch there, a bit of hardware glimpsed for a second then tucked away, all this has been done to built interest, which it has done quite well. Honda will make the Grand Prix effort a major part of its future sales campaigns and they'll create suspense by making us all guess.

Great stuff, if it works. But disaster if it doesn't.

Meanwhile, though, you haven't seen such peering into corners since Hollywood quit making movies about spies and secret agents. The Honda GP effort is being run by a subsidiary established just for this team, to be known as the Honda International Racing Co., or HIRCO for short. HIRCO director is Gerald Davison, an experienced racing manager with Honda's endurance team, as polite and cordial and hard to pin down as only an Englishman can be.

I had asked first to visit the race shop, thinking that surely a few days before the race they'd be willing to let me poke around, take notes and measure things.

Wrong. Members of the press are allowed no further than the ropes that close the garage to the public.

"Don't go in the tent," Davison says, "They'll throw you out on your head."

Honda is keeping its secrets to itself. How well this works was shown by another visitor inside the rope, outside the tent.

Keith Duckworth is the man who designed the Cosworth-Ford V-8, ruler of Formula One car racing. The engine was introduced 10 years ago. The week before the British GP, the one we're at now I mean, a Cosworth-powered car won over the turbocharged and 12-cylinder GP cars by such a convincing margin that they filed formal protest. The Cosworth had to be oversize. It was impounded. And was declared legal.

Duckworth has credentials. He also has doubts. He's on record as saying he doesn't think a four-stroke can match a two-stroke on an equal basis. But here he is, inside the rope at the Honda garage. He's got Shoichiro Irimajiri engaged in conversation. He's throwing every leading question he can think of.

"If you're using some sort of dual piston, you've got to have a yoked connecting rod, right?"

The hint of a tiny smile flicks across Irimajiri's face. "Yes, if you used dual pistons, you'd have to have some sort of yoked connecting rod."

He's giving nothing away. Off to one side Davison is seething with resentment. Who is this *car* chap? Why is he bothering Irimajiri, who has work to do? "Case of the cat telling the lion how to catch mice," he mutters to me.

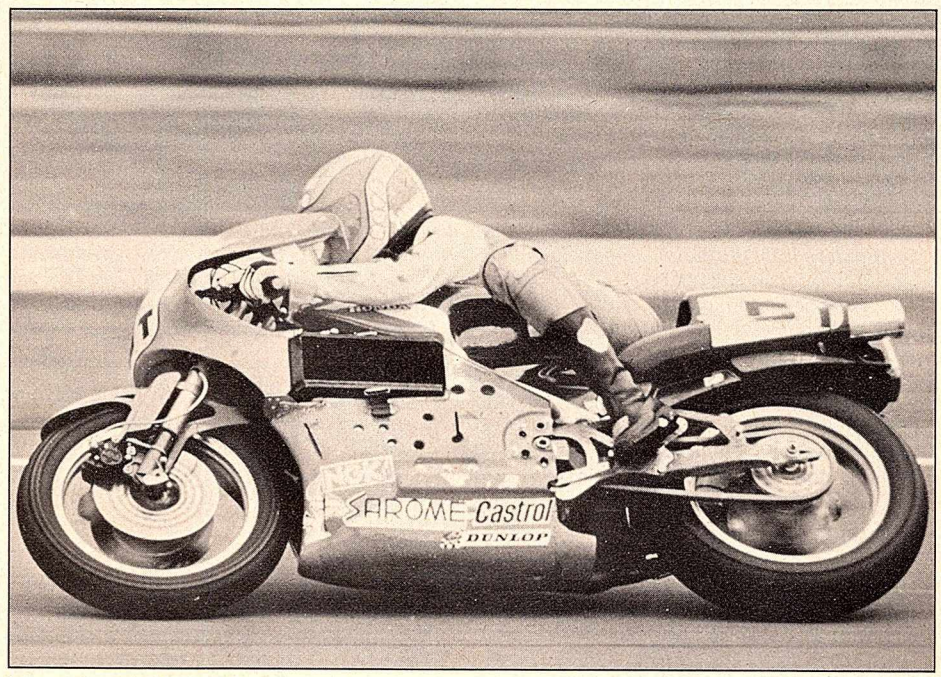
And it might be. But when Irimajiri excuses himself, Vic Willoughby, technical editor of *Motor Cycle Weekly* and I scurry over to Duckworth. He may have found out something we don't know. When Duckworth leaves, Willoughby and I are collared by two Japanese reporters. We may know something *they* don't know.

Let's review the rumors. One of our trusted pals in Japan, a man close to Honda's racing efforts since those early days, wrote to tell us the GP engine was a narrow V-Four with six valves per cylinder. A Dutch magazine published photos of a three-cam cylinder head for a square Four, or a Four with a vee so narrow one head could cover both banks. We've seen sketches of a head with rotary valves on top, where the camshafts usually live. A European reporter flew to Japan, was allowed to take pictures of the engine, all buttoned up, by the way and came home saying in print that the engine was a tandem-piston job, a V-Eight disguised as a V-Four in some manner that would meet the FIM limit of four cylinders.

None of this was invented. The people who reported it, believed it.

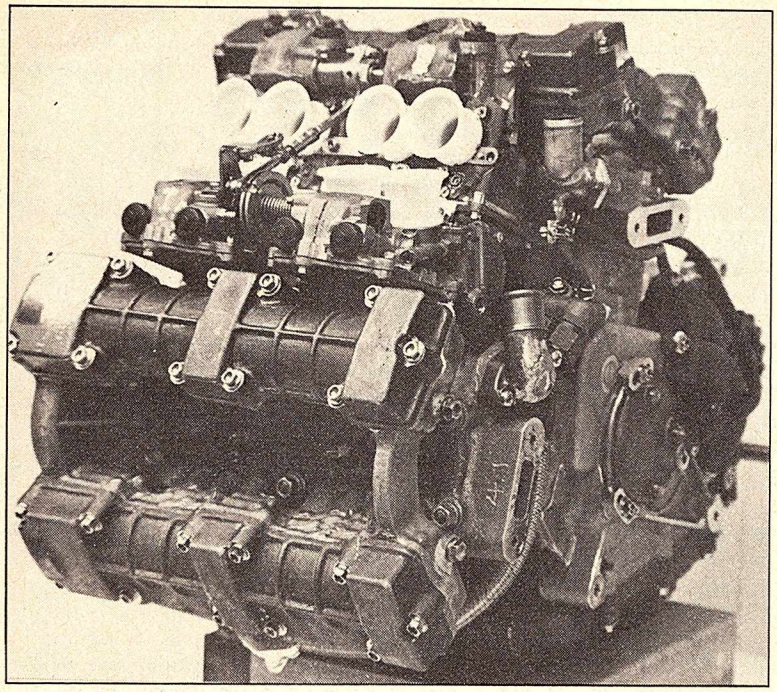
The answer is Honda's system. When they made the decision to field a GP team with four-stroke power, they assembled a project team. The teams guys sat down at a big table and threw in all the ideas that came into their heads. No, I wasn't there. But that's how they do things at Honda R&D, and there's no reason to assume this project was different.

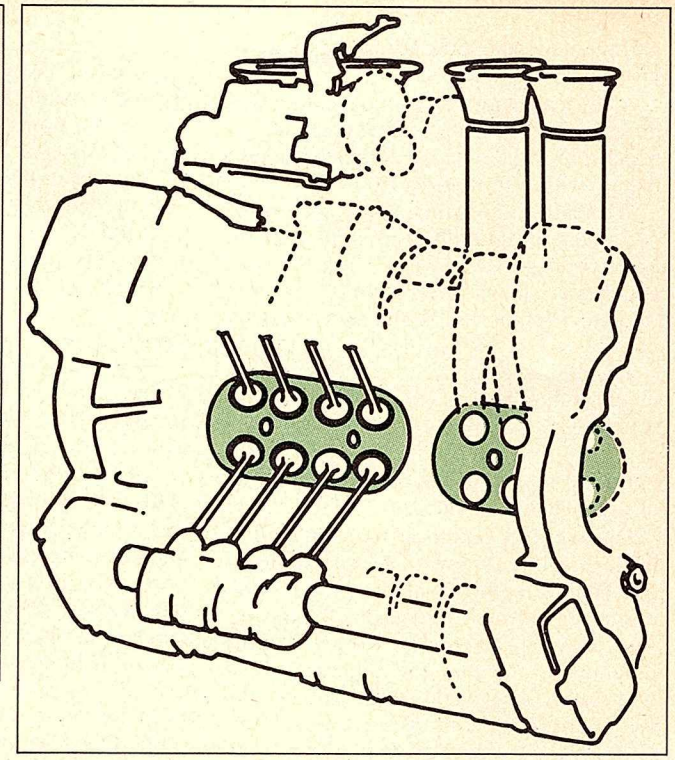
To a large extent Honda's future is riding on this project. To pick the engine in the>



In practice the NR500 looked smooth, sounded nice but was several seconds off the pace. This is Katayama, who qualified at the back of the pack.

Photo by Don Morley





The NR500 engine is quite wide for a V-Four, and the bulk of the four two-barrel carburetors shows why the angle between banks is 100° rather than the conventional 60° or 90°.

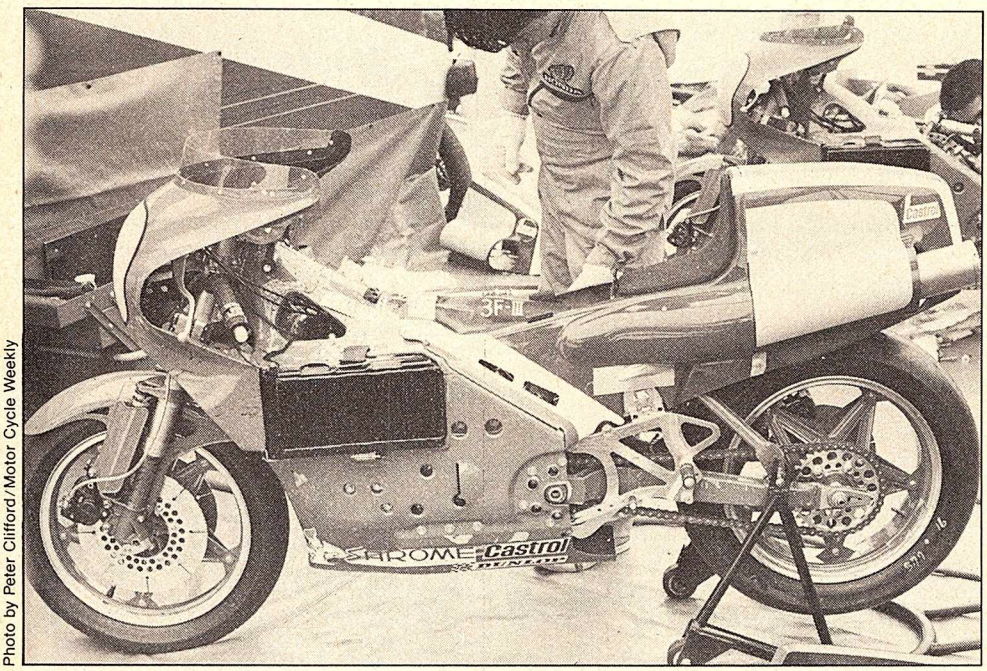


Photo by Peter Clifford/Motor Cycle Weekly

With the fuel tank off, most of the monocoque is visible. Shaped and welded alloy sheet forms a structure from the steering head back to the swing arm pivot. The seat and tail section bolt to the monocoque's back section and to the castings that carry the footpegs. The two side radiators get incoming air from behind the front wheel. Note the forward-mounted front brake, the casting for the trailing front axle and the outboard front springs, concealed here by wind deflectors.

drawing board stage would be foolish. What they did—I think—is pick the most likely engines and put their thoughts in metal, that is, build some prototypes and see how they ran.

I think there were at least three engines; the V-Four shown here, a square Four and perhaps the tandem-piston V-Four. There may also have been six-valve heads, and even rotary-valve heads, just as Honda had an opposed Six running around R&D three years ago, for the press to, uh, accidentally discover.

(Irimajiri refers to the various bits and glimpses reported earlier this year as "April Fool" engines. HIRCO enjoys this cloke-and-dagger game as much as the press does.)

Engine

Well. What do we actually know about the NR500 engine? In rough outline, it's a V-Four, with the forward bank low and the banks at an included angle of 100°. Normal angle for a V-Four would be 60° or 90°, but making the angle wider gives room for the carbs within the vee, just as the CX500 uses 80° to give room for the rider's legs. Irimajiri says in neither case does moving 10° away from normal harm the engine or cause extra vibration.

Induction is public knowledge. R&D experimented with fuel injection but couldn't get the mixture control required, so the NR appears here with four twin-choke carbs. Each cylinder gets one carb, each throat feeds an intake port, each intake port has two valves. Each cylinder has four exhaust valves, each valve gets its own port. The four little pipes become two, and the two join into one that joins the pipe from the other cylinder on that bank. There's an exhaust pipe and muffler for each bank. Right, a muffler. The FIM has noise rules for racing bikes, but even though Honda got a waiver, 105 decibels instead of the 100 db for two-strokes, the four-strokes make more noise and the NR wears a full muffler on each pipe.

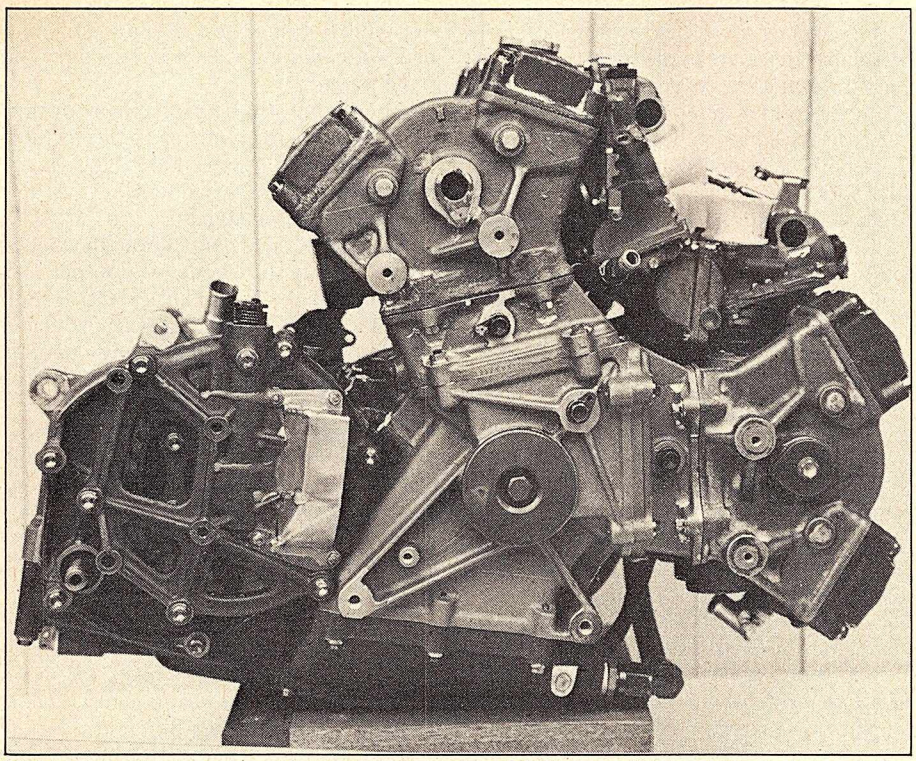
Each cylinder bank has two camshafts, driven by gears. Diagramming pictures of the engine indicates an included angle of about 65° for the valves, the inlets being more vertical than the exhausts for more downdraft.

The valves. Dazzling business here. Multiple valves are back in vogue, thanks to Honda, although Harley, Indian, Triumph and Rudge and many more used four-valves-per 50 or so years back.

The first reason is well known. Little valves can be opened and closed more quickly, with less spring pressure, than big valves can.

Next, engine power depends on breathing, a function of port area, valve timing and lift. You can get more little valves above a given piston bore than you can get big valves. (In car racing, by the way, four valve heads never went away.)

Illustration by Lou Bruno



Righthand side view shows the engine's compact design, and the extremely low cylinder blocks, barely visible between the crankcase and the heads.

Here's a new one, thanks to Keith Duckworth. High compression is a Good Thing. The higher the ratio, the more power.

But. The NR500 will rev to 18,000 rpm now, with 22,000 planned for later. A four-stroke has stronger power pulses than a two-stroke has, but it has fewer of them. You need power strokes for power, which is why the engine has incredible revs.

We are dealing with astronomical speeds for the columns of intake mix and exhaust gas, columns which are being started and stopped hundreds of times per second. This requires longer valve timing. A production four-stroke will use 270°, a racing engine will get close to 300°, this super-speed 500 has to have well beyond that.

Fine. Now picture this. With long valve timing, the valves must be open when the pistons are at top dead center. Have to be. They must have room, or they'll hit the pistons. Duckworth says this is the reason the four-stroke won't work, see, because if you leave room for open valves, you enlarge the combustion chamber. Right. You can't get the compression ratio you need for power.

However. Actual maximum breathing is controlled by the area beneath the valve head, between the head and the valve seat. Due to geometry, lots of little valves give equal area here *with less lift.* Bingo. Less lift means less risk of hitting the piston tops, equals smaller combustion chambers, equals more power. As a bonus, less lift means you get max lift quicker, so you have more valve opening for the same timing.

That proves the value of all those valves. But how to get all those valves into a combustion chamber?

Oval pistons and bores. That's one rumor confirmed by Honda.

Oval pistons aren't new; there were tuning kits for Triumphs built in the 20s with oval bores and pistons. The shape is mostly a function of the need to pack all those valves into the chamber. Two large valves or four smaller ones fit nicely above a round bore. Two rows of tiny valves, though, lend themselves to a trench-like chamber, above a bore shaped like an oval track; semi-circles at each end, with a rectangle between them.

This shouldn't be as difficult as it first sounds. Along with its subsidiary R&D company, and the subsidiary racing companies, Honda has a wholly-owned outfit whose job is to make the machines with which Honda makes motorcycles, cars, etc. They do good work, like the series of automated devices that put crankshafts through 72 consecutive machining operations without human intervention. One assumes that building machine tools that finish off oval bores, and designing rings to work in said bores, is not beyond their skills.

Guessing again, the shape of the heads, cams, etc., indicates that the combustion chambers look like a pair of standard four-valve chambers, that is, two paired intake opposite two paired exhausts, spark plug in the middle, next to the same thing. (See sketch.) This fits all the parts, and the twin plugs speed flame propagation within that long chamber. Ignition is transistorized battery and coils; no tricks visible there.

Big secret below the valves. Davison was happy to explain the carbs, the valves, and the camshafts.

. But during practice, I noticed something.

The exhaust note. It's deep, muffled, throaty, heaps more pleasant to the ear—well, okay, to my ear—than the two-strokes.

And the NR500 sounds like an inline four. Whrooom, rather than the pulsing thunder you get from all the other vee engines I've ever heard.

I mentioned this to Davison and asked, in all innocence, about the firing order.

Slam. Down came the shutters. Everything between the valves and the crank is top secret, he said, and quickly changed the subject.

Hm. Normal vee engines share crank throws, which puts the cylinders thus paired up on a staggered order, 60, 90, 80 or 100 degrees apart. Firing orders are on the basis of 90-270, and that's why the pulsing.

But unless Honda has invented something in exhaust tuning unsuspected by me and the rest of the world, some way of tuning out the sound of the irregular beats, a smooth-sounding four has got to have a 180° firing order; a power pulse every half turn.

You could do it with this engine. The crankshaft is at right angles to the wheelbase. The oval bores make for a wide engine. The NR500 is much wider than any 250cc Twin you ever saw.

All those revs need a terribly strong crankshaft. Lots of main bearings, rollers in this case. Honda likes plain bearings, but they won't do here.

That means a built-up crank. What you could do, and what I suspect has been done, is have an outboard main bearing, then a throw, a center bearing, another throw, and an inner bearing. Then, in the center, the power take-off, and on the other side three more mains and two more throws. Each piston gets its own throw and the throws are 90° apart; a points-of-the-compass arrangement. When the right-hand side is at north and east, the lefthand side is at south and west.

It would also be entirely possible to have the separate throws spaced 80° and 100° apart so the V-Four would fire every 180°, not the 170° and 190° firing interval that would occur with a standard 90° crank in the 100°V-Four.

Not the usual thing. But it would give 180° firing, just like an inline Four, and there's room for it. You'd also get one heck of a rocking couple with one side hitting top dead center at the northeast while the other hit BDC at southwest. But then I remembered, we're not looking at a Harley or Ducati here, we're dealing, if the marks on the engines are correct, with a stroke of 36mm. Call it an inch and a half. The rocking probably wouldn't be as bad as the smooth power flow would be good.

Behind the crank is a jackshaft, with the water pump driven off its left end, and then the clutch. The gearbox has six speeds, all indirect, no ratios given. Chain drive, of course.

One can't speak of the bore size, not in the standard way, but with a stroke of 36>

mm and a limit of 500cc displacement, the piston area should be about 3463mm², which would be equal to a round bore of 66.4mm. That would make the NR500 oversquare by a factor of 1.81 to 1.

What this all means is a matter of speculation. We know some facts, we can guess at others, we won't know for sure until Honda is ready to unbutton the engine or file for the scores of patents they say they can get from the ideas they've used here.

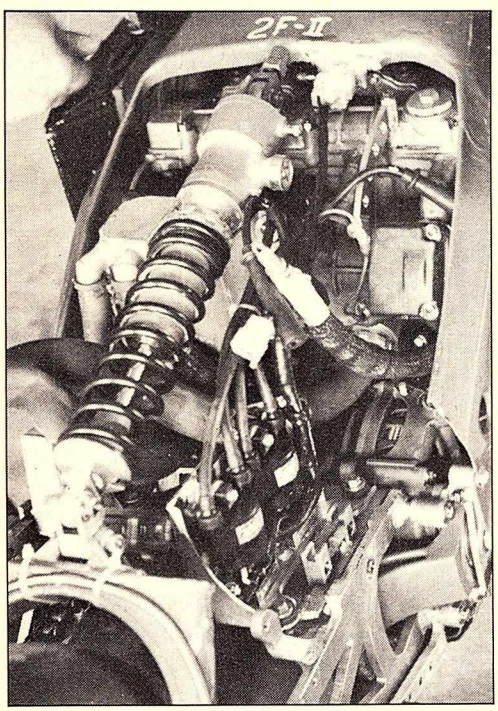
In a more practical sense, if the Suzuki and Yamaha two-stroke Fours produce 125bhp, and because the lighter NR500 is slower than the rival two-strokes, we'd reckon the NR500 was developing 95 bhp at its introduction.

Chassis

No matter what becomes of the engine or anything else about the NR500, the chassis is a first, and the most important technical leap motorcycle racing has seen for years.

Monocoque. Lovely word. Sounds exotic and space-age at the same time. There are people who'd have you think monocoque means a one-piece body-fuel tank-tail section, or that a large backbone of sheet metal, with engine hung below, is a monocoque.

Strickly speaking, they're wrong. The world's truest monocoque is an eggshell. A stressed skin. A skin strong enough to do all the work that a frame would otherwise do.



Single rear shock has adjustments for spring preload, air pressure and damping. The rear mounts to an upper swing arm, the front feeds loads into the trailing edge of the monocoque. Engine serves as a bulkhead for the monocoque and is virtually a press fit. (Detail differences in the engine parts visible here hint that this engine isn't exactly the same as the engine photographed out of the bike.)

This comes most clearly from aircraft. Airplanes first were made from bundles of sticks. Then they covered the sticks with cloth. Then they made the sticks of metal, and covered them with metal and one day somebody reasoned that if you placed the sticks right, and fastened the skin to them right, you could use fewer sticks, or struts, by that time. And then, if the skin was even better, you could leave out the frame entirely.

They did it on airplanes, then on cars.

And motorcycles are still made from metal sticks. Big tubes in diamond pattern have given way to smaller tubes in the form of a cage around the engine (a space frame, in aircraft or motorcar terms) but still, bikes are a generation behind.

Until now. The NR500 is a true monocoque, welded-up alloy panels that form the fairing, the body sides, the backbone area. The shape is rather like a free-form ice cream cone, with the tip at the steering head and the open end at the back.

Into the open end slides the engine and gearbox, with swing arm attached. The engine and gearbox bolt to the sides of the monocoque, becoming a bulkhead, the frame for the skin.

Irimajiri, having performed like most innovators by doing what is obvious once it's been done, says the monocoque has to be the future. Look on the road, he says, and you see fairings. On the track, likewise. If you are going to have a skin, for comfort or streamlining or weather protection anyway, why not let the skin do some work while it's there?

The monocoque skin is useful for another area: cooling.

Water cooling is what made two-strokes work. The experts said two-strokes had no potential because they made heat along with power and the heat was more than the air could carry away, directly at least.

So entered radiators.

Now. A radiator won't pass as much air as hits its surface. The tubes and fins are an obstruction. The car guys learned years ago that at speed, you can get away with a radiator intake one-third to one-fourth as large as the radiator's cross section.

If you have a properly shaped intake and you can mount the radiator well behind it, with the air ducted to the fins.

Fine. Except that motorcycles are shorter than cars and there isn't any room for sleek noses and ducting. You put the radiator in front, below the steering head and you accept increased aerodynamic drag as the price.

Honda doesn't. The leading edge of a fairing is a positive pressure area. The sides, if you shape them right, can be negative pressure areas.

So the NR500 has two radiators, one on each side. The cooling intake is in the fairing center, below the steering head. The air is pushed in there and when the bike's at speed, the air is pulled through the radiators by the windstream rushing past the sides. Kind of supercharged cooling, which brings less frontal area and better streamlining, i.e. more speed for the same power.

(There may still be problems with this. The NR appeared with covers on the radiators, ducting of some kind. The covers were removed for the first test sessions, and haven't been used since.)

A less noticeable benefit from the monocoque is that the frame, so to speak, is outboard of the swing arm pivot. Honda has the output sprocket aligned with the pivot, easy to do with the mounting points outboard, so there's no chain tension variation due to rear wheel travel.

The fuel tank rides atop the, uh, backbone portion of the monocoque and the seat and tail section—a sub-tub?—snugs down over the castings that carry the footpegs. This back section bears no extra weight and isn't a stressed portion of the machine.

Suspension

On any other racing bike, the NR's suspension would be headline news. Here, though, it's merely less different than the rest of the machine is from other GP racers.

The front forks have Irimajiri written all over them. One of his pet theories is that if you mount the axle with total inflexibility, you don't have to worry as much about the tubes, sliders, triple clamps, etc.

The NR's forks are telescopic, upside down. Common practice is to have the stanchion tubes bolted to the triple clamps on the steering head. Then the sliders, the cast pieces into which the stanchion tubes fit, carry the front axle.

Not on the NR. The lower tubes are the smaller ones, and they fit inside the tubes carried by the clamps. Weight is the reason here, perhaps, as this is a light bike and the lightness comes mostly from the monocoque. When sprung weight, controlled by the suspension, goes down and unsprung weight, like wheels and tires and brakes and hubs, remains the same, the suspension tends to be overcome. (That's one of the reasons big bikes can be made to ride more comfortably than small bikes.) Thus, the smaller tubes are unsprung, the larger tubes are sprung.

But the lower tubes aren't normal. They are castings, fancy ones, with large sections around the front axle. The axle threads inside both lower legs, completely surrounded and then clamped into place. Hard to imagine a more rigid system.

Next, the axle mounts behind the tubes. Totally different from the leading axles fitted by BMW years ago, then used on motocross machines and now coming back on mass-produced road bikes.

Irimajiri speaks good racetrack English, but to explain the trailing axle, he needed a diagram. Forces received by the front tire go to the axle, then up into the tubes. If the axle is in front, you get a bending, a twisting, which affects the springing and damping. The action goes up, while the >

Photo by Peter Clifford/Motor Cycle Weekly

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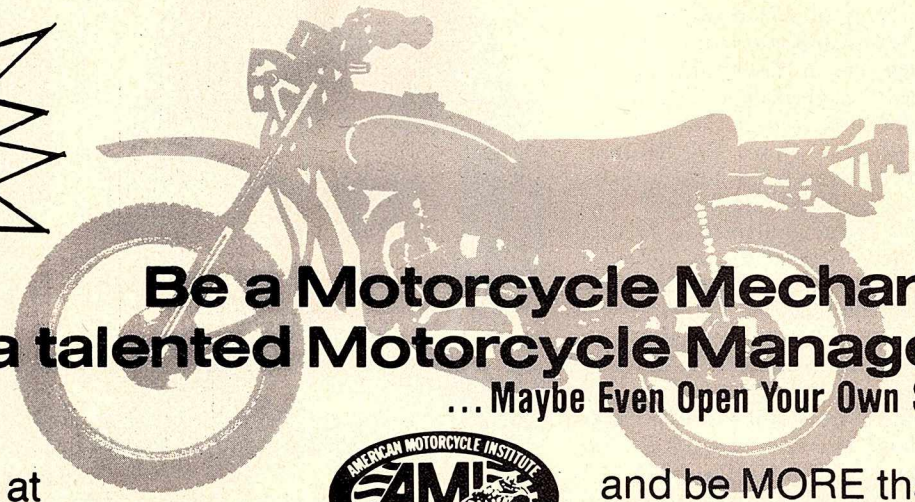

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reaction into the frame is at an angle.

But. If you have the axle behind the tubes, the lines of action and reaction cross, so there's less contortion.

Drawback here, at least to the observer, is that when the tubes are in front of the axle, they're also 'way in front of the steering post. Plus, on the NR the front brake calipers are in front, both of them. That's a lot of weight in front of the steering axis. By racing standards, as practiced by other designers, this would make for very heavy steering. The trailing axle also reduces trail, and the self-centering force. Neither rider complained – nor would I expect them to, under the circumstances– but this does look odd.

The spring in front of the tubes is easier to understand. You can change it quickly and it frees space inside the slider and stanchion tube for the oil, air and valves, etc. Increase the volume and you get more scope for tuning.

Rear suspension is single shock, an idea used by other grand prix teams for several years now. The NR has a normal swing arm, with a second smaller arm pivoting on it and running forward to the Showa spring/shock. The shock feeds into the rear-center-top of the monocoque. No details given but from the dials and such, the Showa unit can be adjusted for spring rate, pre-load and compression and rebound damping.

A small link runs from the rear of the gearbox up and back to the connection of the upper swing arm and the shock. This is simply a linkage point to keep the shock from moving up as it moved forward. A rigid upper arm, like that on the Yamaha monoshock, moves up. Honda wanted to keep the seat low, so they used a geometry control here.

Fairly normal rig. I thought to rag Irimajiri a bit and I asked why the suspension wasn't as different as the rest of the NR, I mean, I sort of expected leading link forks, hubcenter steering, double trailing arm rear and so forth.

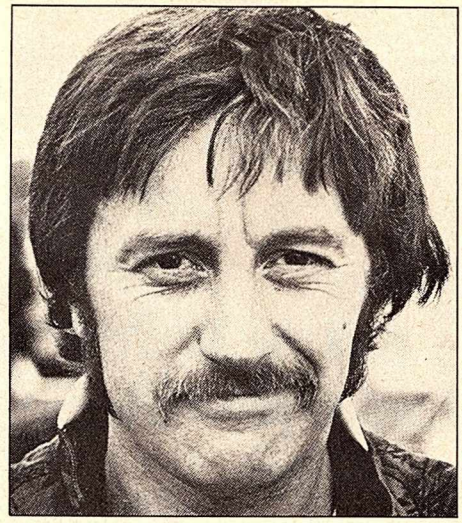
No, he said, in what seemed to be all seriousness, they had enough to do with the engine and the monocoque, so they used straightahead suspension in order to be able to dial in adjustments at the track.

Oh, I said, remembering those April Fool engines.

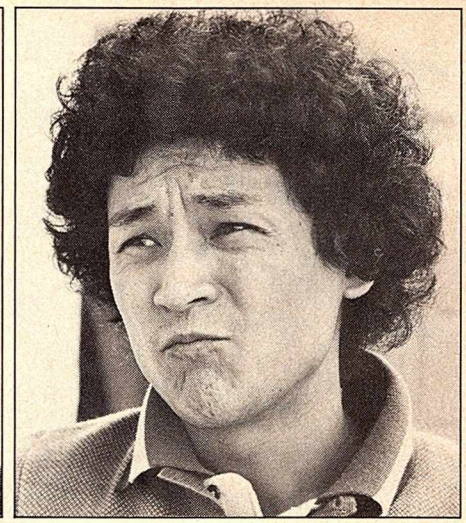
Brakes are disc, naturally, with holes drilled in the inner portions of the rotors and slots coming in from the circumferences. Looks like another way to get water off the surfaces in the wet and clean grit off the pads in the dry.

Dunlop supplies the tires, on 16-in. Comstar-style wheels. The smaller wheels lower the bike, of course. The Dunlops used at the race were much wider and lower than normal, the idea being that the smaller wheel means a shorter footprint, so you have to widen it to get the same contact patch.

A challenge, obviously, and the Dunlop people say they've tried 12 compounds, in 10 designs, during their development program with the NR.



Mick Grant



Takazumi Katayama

Enough tech talk. What we saw in the NR500, as introduced at Silverstone, was a knockout of engineering insight, a daring attack on the status quo, the old revolutionaries back to knock all the experts on their tails again.

Informed guess work puts the NR's power at 95 bhp. Gossip says the first version of the NR weighed 220 lb., but that after the initial tests and the beefing up of weak places, the bike hit the grid at 240 lb. or so. Sensational work, considering that the RG Suzuki and YZ Yamaha tip the scales at nearly 300 lb.

So what we also saw was an underdog.

There were other factors working here. It was very important to Honda, the men at the top I mean, to have this bike at this race. They said they'd do it, they needed it to be done.

Was the NR ready? Probably not. No race bike is every ready.

Further, Silverstone is a fast track, a power track. Earlier in the week, HIRCO rented Donington Park, a tight track. A handling track. Earlier this season Wil Hartog on a works RG Suzuki set a 500cc lap record at Donington, of 1:15.8. Mick Grant lapped Donnington during the tests at 1:18.8. Not a shabby first time out.

Practice

Silverstone isn't Donington.

The Honda riders are Mick Grant and Takazumi Katayama. Both are experienced. Grant has won countless superbike races. Katayama was 350 world champ in 1977. Both men are ranked in the top 20 road racer. by anybody's score.

Below the level of Roberts and Sheene, though, there are perhaps ten good men, difficult to evaluate, and better than there are rides available. Honda's entry into GP racing thus opened doors for two riders, and those lucky two turned out to be Grant and Katayama.

Why them? Nobody knows. Perhaps Honda made bids for Roberts, Sheene and Ferrari, but couldn't afford the price. Perhaps they figured if they hired Roberts or Sheene and won, the headlines would say "SHEENE WINS" and forget about make of bike. Honda isn't in this to make riders famous.

Whichever, Grant and Katayama are conscious that they have got jobs they couldn't hope to get, no matter why. This was an important occasion. Mr. Soichiro Honda himself even dropped by for the testing at Donington, although he didn't stay for Silverstone.

Things did not go well. All the contenders began with times in the range of 1:32, 1:33. The NRs were off by several seconds, in the high 30s.

The others brought their times down as they worked out tires and suspension settings. The Hondas didn't. They looked smooth, they sounded good, but again and again the bikes pulled off, into the pits, through the garage and into the tent. Sound of wrenches working at great speed.

Discouraging, for me. Never mind the results, the finishing order of the race. I've been around long enough to know that you seldom field a winner right from the start.

But the problem seemed to be the engine. Oil leaks. There was even one mechanic who came to the grid with the bike, and stood there clutching a giant roll of paper towels. Grant or Katayama would fire up and scoot away and he'd bend down with towels and mop up the oil.

That, I kept thinking, looks like a problem they should have been able to solve in the dyno room.

Kenny Roberts worked his way down to 1:29.81, the pole and the lap record. Sheene and Ferrari and Hartog weren't far behind. Meanwhile, the Hondas came in, got worked on, went out, came in.

"Power is the least of their problems," an expert standing outside the garage told me, "it's the tires."

No. The most of their problem was getting into the race. Katayama's best was 1:36.74, putting him 39th out of the 41 starters allowed. The cut was 1:37.2, and Grant's best was 1:37.9.

Shortly before the start, Davison, look-

ing grimmer than a barrel of hangmen, came ripping through the paddock on a pit bike. He slid to a stop outside the official's building and burst through the door.

Made it. Thanks to other entrants falling off or having mechanical troubles, there was room on the grid. Grant was first alternate and he was allowed to start.

The Race

It was great. Stupendous. Best I ever saw.

Kenny Roberts is the best rider in the world. We knew that already, but watching him lap the field at Daytona or practice wheelies at Laguna Seca isn't the same as watching Roberts against the world.

The other guys are good, too. At home, Kenny wins. In the world championship, he works for his wins.

During practice I went to the toughest corner on the circuit. Roberts came through knee down, front tire doing a jackhammer, skipping and stuttering while Roberts held it down, kept the front wheel in line by force of will.

After practice I commented. "Does the front tire always do that?"

"Oh, that isn't the tire. There's something not right in the monoshock and it's feeding that back into the front wheel."

Barry Sheene was a pleasant surprise. In the U.S., that is, reading what Sheene is supposed to have written, he comes off as a lightweight, a wiseacre and a poor loser.

I think now, having watched him firsthand, that Sheene thinks the big talk is psychology. At close range he's pleasant, good with the fans—and he's a national hero, no question, world champion or not—and he surely can ride.

During practice his Suzuki looked like it was made of rubber. He came through the twisty bits with the bike in constant motion, squirming around, constantly moving off line. Sheene looked like a man wrestling an alligator, a sly and bad-tempered alligator at that. But he made it work.

Both teams did the right things overnight. Roberts and Carruthers dialed in whatever it took. Sheene's crew took a big chance and swapped rims and suspension settings at the same time. Into the field or into the fence, as they used to say at Indy.

At the start Hartog did a demon exit and came through in first place, pursued by Ferrari and Sheene, all bunched up. Roberts was in mid pack, covered in oil from a warm up lap leak, repaired on the grid. As the leaders dueled, Roberts caught up, then he and Sheene did a duet and ran off from the rest.

Marvelous. They were closely matched, both bikes worked perfectly. And they trust each other. The contest was so even they raced with their heads, each man aware of what the other was doing. If Roberts was a foot wide here, Sheene would nip past, then reach behind him and make rude gestures, meaning "Did'ja see that? Try and catch me now!"

Then Sheene would leave an opening and Roberts would power past and communicate back. This went on to the last lap, with Kenny in the lead and Barry using a swing out and drive down that had him half a bike length, yes, after one complete race, in back.

What a race. The fans were so carried away that they swarmed onto the track, the better to honor their heros. Very un-English, the kind of thing one expects from a soccer crowd in Spain, but again, this was the sort of racing that causes even Englishmen to lose their reserve.

Indeed, one Englishman, to whom I hadn't been introduced, congratulated me on Roberts' behalf and I told him—and meant it—that I would have enjoyed it just as much if Sheene had won.

What? Oh, yeah, the Hondas.

Katayama came though in last place on the first lap, then passed some other bikes, then didn't come 'round again. Grant, I never saw. Turned out his engine got a terminal oil leak at the start. The oil dumped onto the rear tire and Grant went down, literally in flames.

Later in the program, during the Superbike race, I looked behind me while watching from a corner out on the track and there was Katayama. He really does like racing.

Or maybe he didn't feel like hanging around the Honda tent.

Katayama is a rock singer in his spare time. Honest. He's a cheerful man, affable, open to approaches.

"I missed you out there after the first laps," I said. "What happened?"

"The engine began to misfire, then (with a smile and a shrug) I lost the front brakes."

"What do you think of the bike?"

"Not enough horsepower."

Katayama rides the way you'd expect a rock star to ride, lots of showmanship.

"The bike looked good, but you didn't seem to be riding the way you usually do, you know, not hanging it out."

Another smile and shrug. "Not enough horsepower."

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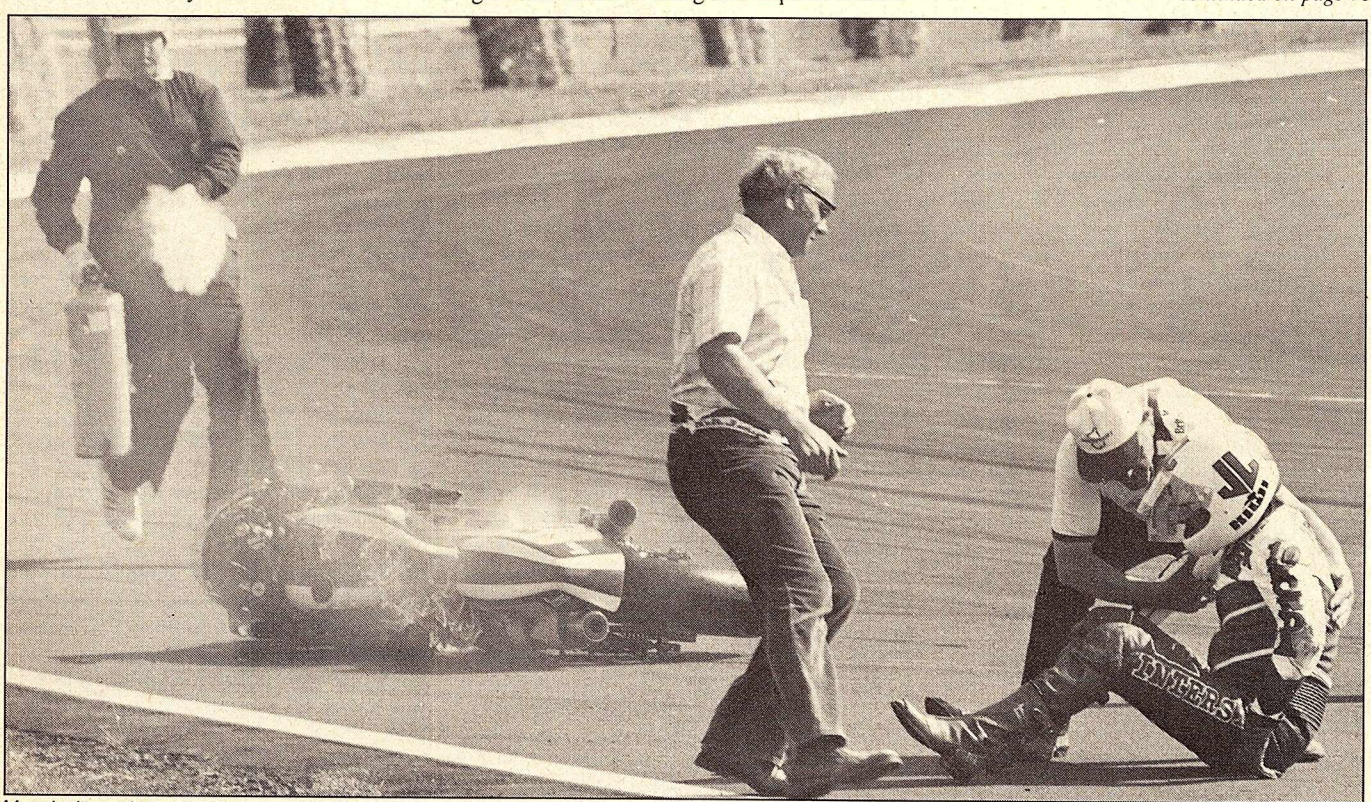

Marshals rush to aid Grant and a fireman opens up on the NR500 after Grant's first lap spill. You can just barely see flames pouring from the machine.

Photo by Don Morley

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Winter Survival Is Easy for Carefully Prepared Motorcycles

by Glen Brinks

It's getting to be that time of year again, when you have to bundle up like an arctic explorer just to ride around the block. Time to put the bike in the shed and wait for spring. Store it properly and come spring, it'll be eager to go. Do it wrong and by the time winter's over, you'll have a restoration project on your hands.

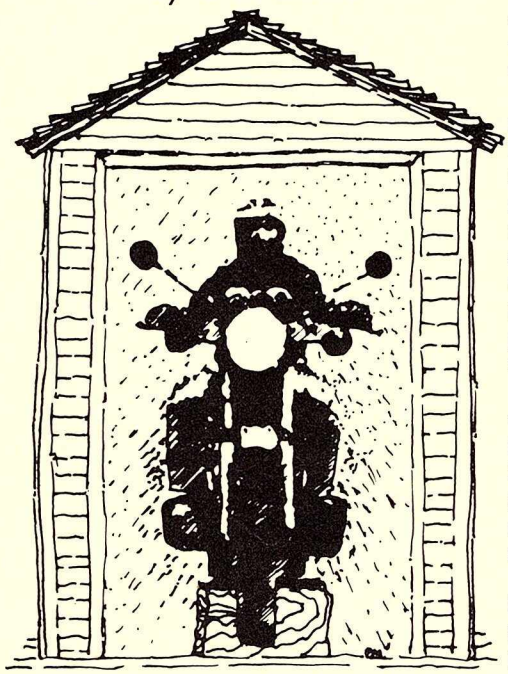
Corrosion is the main enemy, both internally and externally. External corrosion is easy to fight. The first step is to clean the bike. Not just the tank and fenders, but all the little crevices like under the fenders and around the battery compartment, where hidden dirt can trap moisture. Run the engine until it is completely dry. Moisture remaining in the exhaust system can be removed by riding the bike a few miles or by removing and draining the pipes and mufflers. Either way, spray their insides with a moisture barrier such as oil, WD-40 or silicone spray.

Check the bike over for nicks and scratches in the paint and touch these up with a fine brush and good quality enamel. Use clear if you can't find a close color match.

After the touch-up paint is dry and hard (it may take a day or two), wax all the painted surfaces and buff out the wax. Coat the engine and pipes with a light coat of oil, WD-40 or silicone spray. Other bare metal surfaces can be treated the same way or waxed. Some riders prefer to spray all the metal surfaces (except the engine and pipes) with clear lacquer or Krylon to eliminate the rusting problem.

Internal corrosion is caused by acids in the oil formed during the combustion process, so the oil should be changed before storage. If there is a removable oil filter, remove it. Replace the cover or bolt and refill the crankcase. Put a few ounces of oil into each cylinder, kick the engine through a few times to coat the cylinder walls and then replace the plugs.

Or you can use military/aircraft practice and "pickle" your engine. Replace the crankcase oil with an engine storage oil that meets military specification Mil-L-21260. These oils are formulated to cling to metal surfaces and provide optimum corrosion protection under cold conditions while conventional motor oil is designed to cope with engine heat. (Many oil companies sell storage oil in bulk lots but small quantities are available as Stits Engine Storage Oil, $3.84/qt. from Stits Aircraft Coatings, P.O. Box 3084, Riverside, Calif. 95219 (714) 684-4280. Run the engine at low rpm for a couple of minutes to distribute the oil throughout the engine and then follow the rest of the conventional storage procedures. When you return the bike to service, drain the storage oil and refill with conventional oil before starting up the engine.



Remove the battery, clean it and the terminals off with baking soda and water (being careful not to get any inside the battery) and then store it in a dry place. Charge the battery every month or so on a trickle charger. If the battery is left in an unheated garage, a charge is necessary to keep it from freezing. Battery electrolyte at 1.100 specific gravity (discharged) can freeze at 15° above zero. But at 1.260 specific gravity (fully charged) it won't freeze until the temperature drops to about 75° below zero.

Drain the gas tank, slosh some oil around inside it to prevent rust. Then drain clean and dry the carb float bowls so no gas is left to dry out and form varnish. Give the points a spray of WD-40 or silicone spray.

Lube the chain and cables. On shaft-drive models, change the driveshaft and rear drive oil. Grease all pivot points. Stuff an oily rag into each exhaust pipe to keep moisture out. Put the bike on its centerstand and block it up so both wheels are off the ground. Go over all the vinyl and rubber parts (seat, tire sidewalls, fork seals, etc.) with a vinyl preservative such as Armor-All or Son-of-a-Gun to reduce drying and weather checking. If you apply a preservative to the tire treads, the tires will have to be carefully scrubbed-in (don't try to drag the pegs in the first turn you come to) before they will provide full traction.

If you cover the bike, use a water-resistant cover that "breathes." A waterproof cover may collect condensation on the inside and trap this moisture next to the bike. Every few weeks kick the engine over a few times (but don't start it), rotate the wheels and pump the forks to keep the various seals and bearings lubricated.

To return your bike to service, refill the tank with fresh gasoline and wash off the bike and engine with mild detergent. Check the tire pressure and all the adjustments (timing, chain, clutch, etc.). Clean the brake discs with alcohol, contact cleaner or acetone to remove any oily film. Clean the battery terminals, replace the battery, remove the rags from the exhaust pipes, lube the chain and cables, replace the oil filter and top off the oil.

Kick the engine through a few strokes with the ignition off to pump some oil through it and start the engine. The smoke from the oil in the cylinders should go away after a mile or two. After 50 to 100 miles, change the oil and the filter to dissolve any accumulated crud.

If the bike wasn't properly stored, or if it has simply been left unused for a long time, a few extra precautions are necessary. Kick the engine through a few times to check for compression and feel for any rough spots that could indicate corroded bearings or a buildup of varnish on sliding surfaces. If so, dismantle the engine and fix it. Drain the tank, fuel lines and carbs. If there is any rust in the tank, slosh some nuts and washers (or BBs) and solvent around in the tank to remove the loose scale and then install fuel filters to keep any additional rust out of the carbs. Dismantle the carbs and clean them thoroughly in acetone, solvent or carb cleaner.

To remove built-up sludge from the engine, fill it with a good, high-detergent oil and then change the oil and filter every 100 miles or so until the oil comes out clean. Thereafter, change at normal intervals.

Rubber dries out and hardens with time, so tires are suspect if they've been stored more than a year, especially if the bike wasn't blocked up off the ground or if it was stored in a smoggy area. Check the tires carefully for weather checking and flat spots and if there is any doubt about their condition, replace the tires and tubes. Change the fork oil.

Sometimes a battery that's been stored for a long time will appear to take a charge and test out well on a hydrometer but this "surface charge" isn't sufficient to run the headlight or an electric starter. Batteries in this condition can sometimes be rejuvenated by prolonged charging or draining and filling with fresh electrolyte, but in most cases, it's better to simply replace them.

When you're done, the bike will be in top shape and ready to go, so put on your gear, head for your favorite road and start restoring yourself. ◙

Illustration by P.M. McKenna

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Did Jack Penton switch to Kawasaki's new KDX175 to finish 2nd?

Jack Penton didn't build his reputation on being second. When he switched to Kawasaki, he knew he was going to ride competition enduro bikes that were built to win. Kawasaki doesn't think there's any other way to build them.

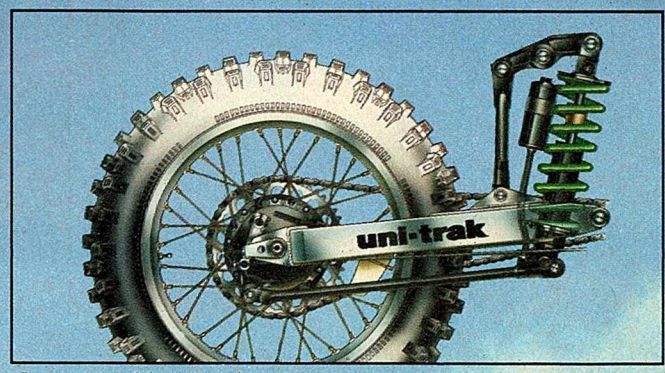
With the introduction of the KDX175, they've truly achieved the state of the art. The engine and the frame are based on the factory KX125 motocross winners, and the suspension is the new Uni-Trak.™ That makes for a double whammy. Power and handling.

Take a look at this power plant. The 173cc two-stroke engine cranks out lots of horsepower and the six-petal reed valve system gives you good, controllable low-end and mid-range power. You get the best use out of this wide powerband through the quick shifting six-speed transmission. Kawasaki's exclusive Electrofusion cylinder resists seizure better than any other production process, and the special radial-fin head helps remove heat when you really start cooking.

Now, how does it handle? The KDX175 is light. Only 214 lbs. And it's narrow. Put them

together and you can throw it around those vicious enduro courses. And the suspension? How does 9.8"of travel front and rear grab you? And the Uni-Trak is no ordinary suspension. It keeps the center of gravity low, and with only one shock you never have to worry about uneven damping. It'll keep you going straight over whoop-de-doos. Measured against any other form of suspension, it keeps the rear wheel on the ground longer. That's more power to the ground...and that's what makes you win. It is the combination of adjustable air-spring leading axle front forks and the Uni-Trak that gives you the trickest suspension on the market.

The KDX175 is the most innovative 175 enduro bike you can buy. It's race ready. Lights



front and back. A tripmeter/odometer, and a first class braking system including a floating rear brake.

If you want another opinion, just ask Jack Penton. He didn't switch to Kawasaki's KDX175 to finish second.

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18 mg. "tar", 1.3 mg. nicotine av. per cigarette, FTC Report May 1978.

Warning: The Surgeon General Has Determined That Cigarette Smoking Is Dangerous to Your Health.

"I'll stuff it into the wall before I let somebody outbrake me," said Gene Romero (3) after stuffing his way into the lead. Schlachter, Roberts, and Pons pursue.

Laguna Seca Formula 750 Road Race

By Kent Peterson

Professor Roberts, Ph.D., R.R., gives lessons while the racing returns to Formula 750

Rich Schlachter sat atop a case of oil in the back of the Kawasaki truck (his Superbike sponsors), soaking up the shade and large quantities of orange juice between heats of the Champion Spark Plug 200 F750 race at Laguna Seca. When asked about his second-place performance in the first 100 kilometer heat, he replied, "Boy, I just received one hell of a lesson in riding fast!" His teacher, of course, was Kenny Roberts, the man who, if such a thing were available, would surely hold a Ph.D. in motorcycle road racing. Unfortunately for his pupils, KR's lessons are taught under a great deal of pressure, special help is almost non-existent, and the time allotted for active student participation and observation is brief.

Schlachter was lucky on this occasion because for 28 laps of the 33-lap heat he and Roberts, along with Skip Aksland, jockeyed for the lead—changing positions sometimes six times a lap. Queried again as to what the most significant thing he learned was, Schlachter said succinctly, "Use less brakes and more gas!" To Rich, who is known on the East Coast as the "king of the late brakers," this meant a large-scale change in riding tactics. "I now realize that the brakes are only there to slow you down. It's more important to be on the gas as soon as possible, getting the hard drive out of the corners."

Aksland's motor began to lose power on lap 25. It finally threw a rod on the last lap, necessitating a push across the finish line and relegating Skipper to 14th place. Schlachter continued to shadow Roberts until lap 28 when KR used his ability in traffic and a 1:08.25 lap to break away, winning the heat by a three second margin. Asked by Roxy Rockwood between heats how hard he'd had to ride, Roberts said "about 90 percent" and that except for a faulty kill switch which was shorting out (he'd ripped away the wire) and fading front brakes (he'd forgotten that the 750 was some 80 lb. heavier than his 500), everything went okay. Schlachter had been hampered by a gas tank vent line which had come adrift, spraying premix on his windscreen and forcing him to raise his head above the bubble in order to see. Other than that he was pumped for heat two.

Gene Romero looked as though he was going to do well in the first heat, making his customary lightning start from the outside of the front row and leading Roberts, Patrick Pons, Raymond Roche, Schlachter, Randy Mamola, Aksland, David Aldana and Mike Cone past the line on lap one. He held the lead until lap five when a throttle cable jammed open and he pitted, leaving Schlachter, Roberts, Aksland and Pons in a group at the front. Romero's crew replaced the cables and he returned on lap 27, circulating at a high rate of knots and giving notice of his intentions for the second heat.

Patrick Pons, the F750 points leader, had been on the pole for heat one, thanks to the annual Laguna Seca timing and/or scoring foul-up. This year it took the form of wildly optimistic qualifying times handed out on a roughly equal basis. Since those whose positions were enhanced weren't complaining and those who felt they'd been jobbed were in the minority, the FIM jury decided to let the times stand—Pons' 1:08.046 went into the record books. He did justify his starting position, hanging onto the leading trio until his tank vent also began to leak, covering his helmet visor with gas, and he began to drop back. Aldana got by him on lap 22 and Mamola passed him on the last lap, leaving Pons in fifth place following Aksland's demise.

Aldana and Mamola had a good duel going until lap 15 when David got away.

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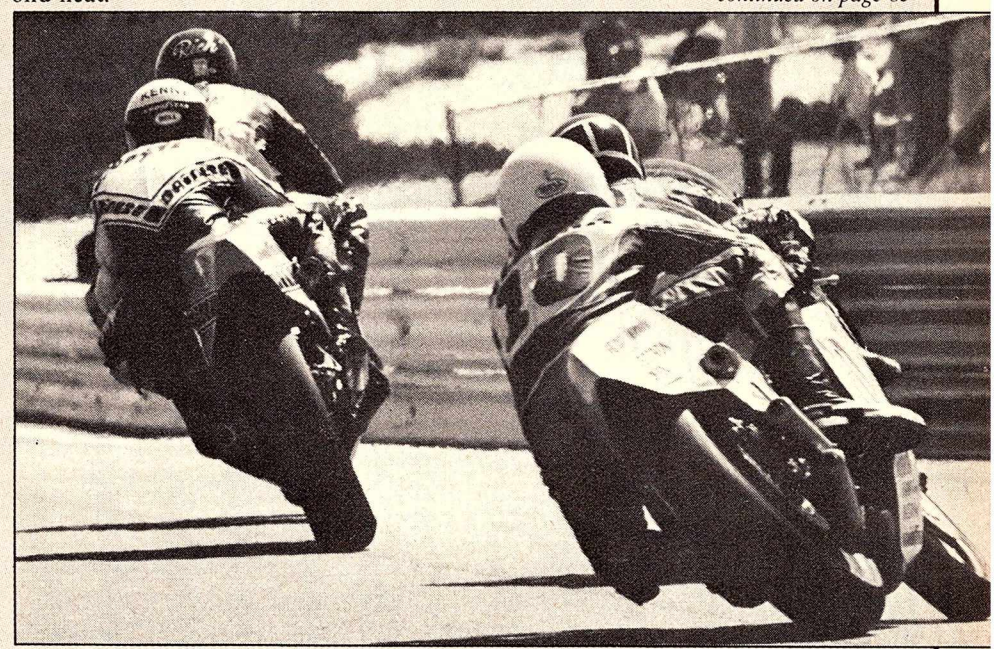
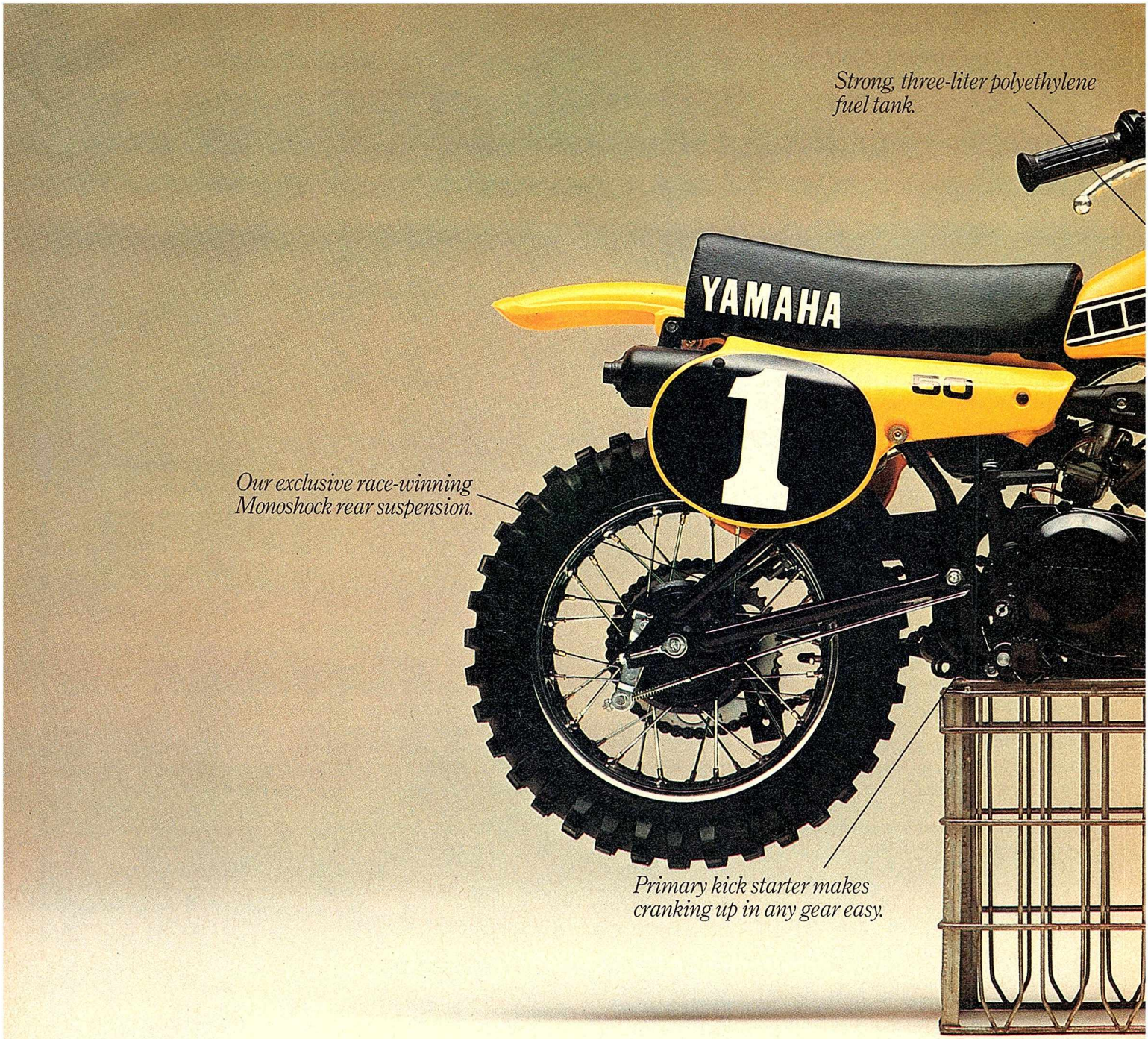


Schlachter up front, with Ph.D. Kenny Roberts second and waiting. Mamola is third, Aldana fourth.

Photos by John Ulrich and Kent Peterson.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reliable torque over such a wide power band.

And it has a five-speed close-ratio racing transmission that lets half-pint Bob Hannahs use all the dirt-eating power to best advantage.

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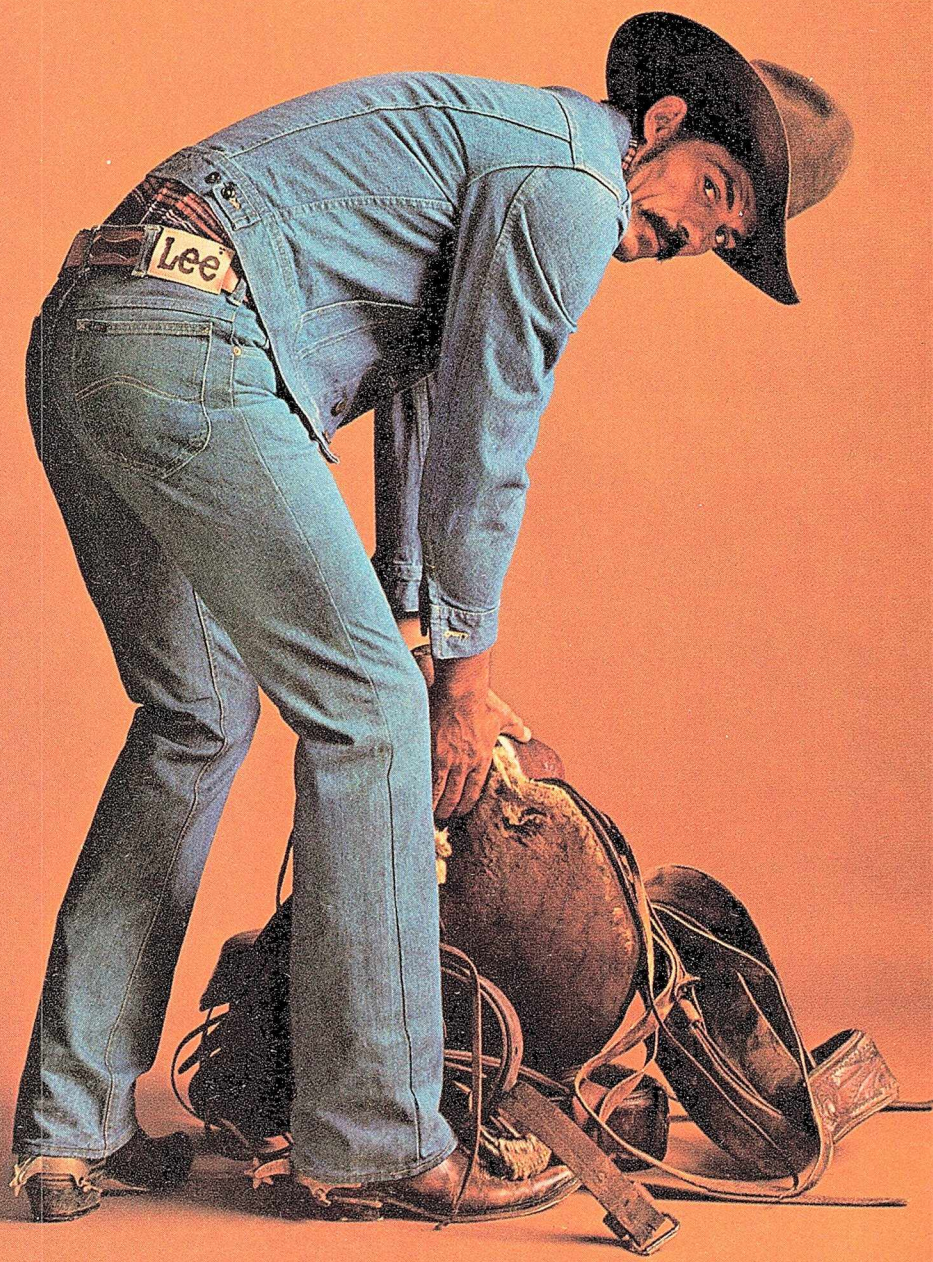

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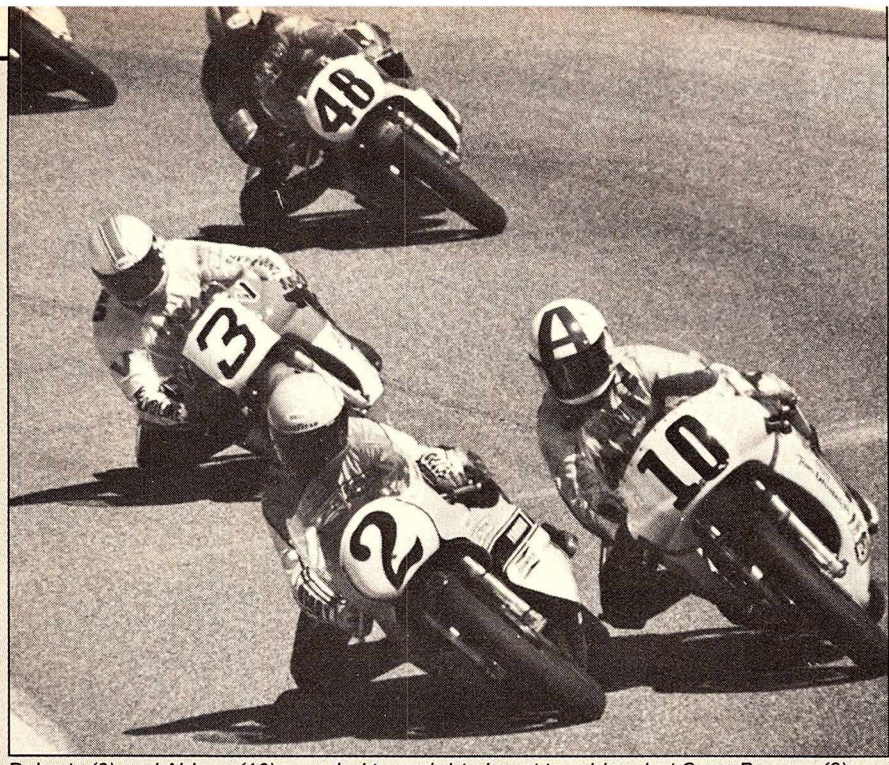


Roberts (2) and Aldana (10) rounded turn eight almost touching, but Gene Romero (3) bullied his way past on the brakes at turn nine. Schlachter (48) and Mamola trail.

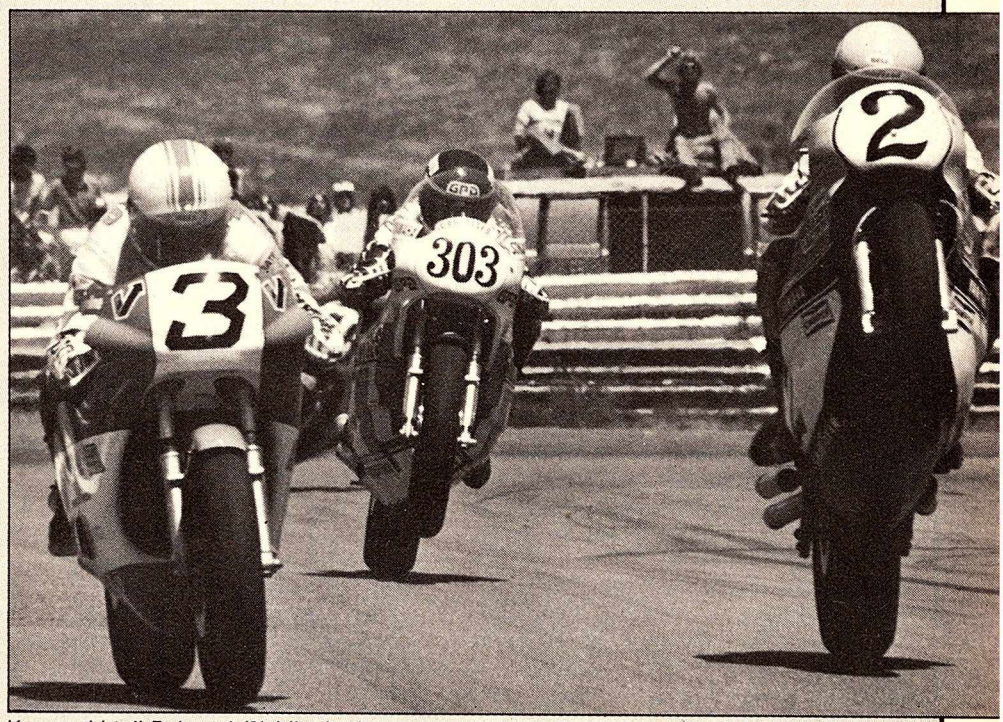
He continued to charge, winding up 4 sec. behind Schlachter. Mamola, fresh from his second place in the Finnish 500 GP, was riding a borrowed bike, as was Dale Singleton. Both had left the A-team machinery in Europe and both were missing the horsepower. Randy, who had unloaded heavily in practice, said he was "riding as hard as I know how" but just couldn't stay with the leaders. Singleton also found it frustrating to be blocked by slower riders on the corner exits and then have them motor away on the straight. Nonetheless he maintained a heat-long dice with Swiss rider Michel Frutschi until lap 28 when Frutschi pulled away and left Dale in seventh place. Behind Singleton were Roche, a very on-form Kevin Stafford, and Ron Pierce.

Between heats activity was based as one would expect on the first heat performances. The front-running bikes received a thorough inspection and in most cases new rear rubber. Roberts' bike was also given a new kill switch. Most needed repairs were of a minor nature, but Mike Cone was back inside his motor in a *deja vu* re-enactment of his Sears Point performance. Once again through heroic effort he managed to be ready in time only to have a crank let go in heat two—yet another long, quiet ride back to Texas. Ron Pierce, whose Yamaha Motor Canada bike didn't even arrive until Sunday morning due to a transporter breakdown, was changing gearing, suspension and tires in an attempt to find the right combination. Even Bob Work and factory machinery can't compensate for lack of track time. The brothers Aksland would be spectators for heat two.

Heat two at Laguna should go a long way toward silencing the people who say that 750 racing is boring. The bike brand name may have been monotonous, but the riding wasn't. Rich Schlachter grabbed a three bike-length lead over the start-finish hill and led an unruly pack consisting of Mamola, Aldana, the still inspired Stafford, Pons, Roberts, Roche, Harry Klinzmann and Frutschi on lap one. For the next five laps the leader remained the same but the rest were in a constant state of change. Roberts dropped back to 10th briefly as his new kill switch also began malfunctioning, but after tearing the wire away once more, he quickly reeled in the leaders. The teeming mass had been joined by Singleton and a listing of the position changes would require more space than this article allows. By lap four another newcomer joined the fray—Gene Romero. Tiger Gene had fire in his eyes as he started the second heat from last position. He passed 17 riders on the first lap and worked his way up to seventh place by lap four. As Roberts said after the race, "You always know when Gene's going for it—he comes out of the hairpin with his elbows straight out." On lap 11 the elbows really straightened out as he passed Roberts and Aldana in a move that brought the corner nine crowd to its feet. Aldana was literally leaning against Roberts' leg as they rounded the 100 mph righthand corner eight, with Romero just behind. Aldana drifted out to the left, leaving barely enough space for Romero to brush past both riders into corner nine. Gene left his braking so late the bike fishtailed into the corner, then he gassed it so hard coming out that he almost lost it again. Then he looked back at Roberts and gave him a come-on wave! Roberts in turn looked back at Aldana and just shook his head.

Romero's lead was short-lived, however, as on lap 14 Roberts repassed and again using his expertise in traffic pulled out a comfortable lead, entertaining the crowd with huge wheelies for the last 10 laps. Schlachter, who had led the first six laps, had learned another lesson. He hadn't changed his rear tire between heats and now it began to get slippery. After several lurid slides he decided to ease off and finish on the pavement. His second overall was assured when Aldana overshot the hairpin on lap 16 and lost about 10 seconds before rejoining.

Patrick Pons threw away his chance to>



You could tell Roberts' (2) bike had steam when he pulled other riders while riding on one wheel. Romero (3) and Pons (303) have grandstand seats.

solidify his F750 points situation when he used too much rear brake entering the corkscrew and crashed. Fortunately, only Pons' pride and the bike suffered. Mamola also had an excellent performance go for naught when his clutch cable snapped on lap 16. Frutschi passed Schlachter on lap 21, finishing third about 5 sec. behind Romero and fourth overall. Aldana came in fifth, followed by Frenchmen Roche and Marc Fontan. Singleton was eighth after a long struggle with Pierce, John Bettencourt, Klinzmann and Stafford.

As Kenny Roberts lifted the front wheel of his bike out of turn nine and set it down again at the start-finish line in a 747-like puff of smoke his brief U.S. tour ended. Two races and two masterful victories. School is out for another year. ◙

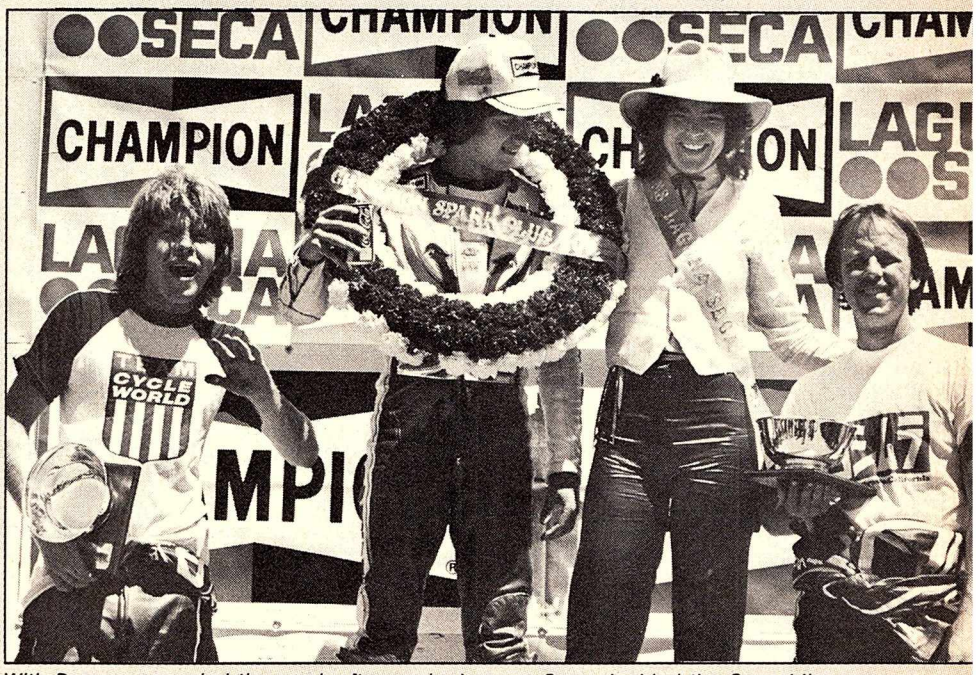
F750 Results

Heat One	Heat Two
Kenny Roberts	Kenny Roberts
Richard Schlachter	Gene Romero
David Aldana	Michel Frutschi
Randy Mamola	Richard Schlachter
Patrick Pons	David Aldana
Michel Frutschi	Raymond Roche
Dale Singleton	Marc Fontan
Raymond Roche	Dale Singleton
Kevin Stafford	Ron Pierce
Ron Pierce	John Bettencourt

SUPERBIKE PRODUCTION

Fast Freddie Spencer finds the way around the Bakersfield Line

By John Ulrich



With Pocono canceled the week afterwards, Laguna Seca decided the Superbike season. Champion Wes Cooley (left) lost the race and won the war; Freddie Spencer won the race and was third in points; Ron Pierce was third at Laguna, second in the championship.

A VINTAGE VICTORY

The Old Crocks Return to Laguna Seca by Allan Girdler

We were sitting on the false grid, waiting for the signal to begin our, uh, exhibition, when the AMA official noticed Martin Vogel. Martin is a typical motocross kid; long hair, surfer style, etc. He was slouched on his Harley KR750 with his borrowed leathers making a perfect match, as the KR is what one would have to call unrestored; paint by brush, solid rear end with disc front brake and bars that would do justice to a Texas longhorn.

So this AMA guy, a grizzled old coot in immaculate whites, stalks over to the long-hair kid just like a scene in a drive-in movie, and he says . . .

"I think I've got a transmission left over from my KR. If you can use it, I'll give it to you."

Welcome to Laguna Seca's second almost-annual vintage race, and farewell to the generation gap, the haves vs. have-nots, east vs. west and every other rivalry you ever heard of. When the old bikes run, nothing else matters.

Persistent readers will recall that two years ago guys with old racing macines put on a show as part of the annual 750 round. The crowd loved it, but last year the track didn't get proper requests in time to stage another show, so they said to come back earlier for 1979.

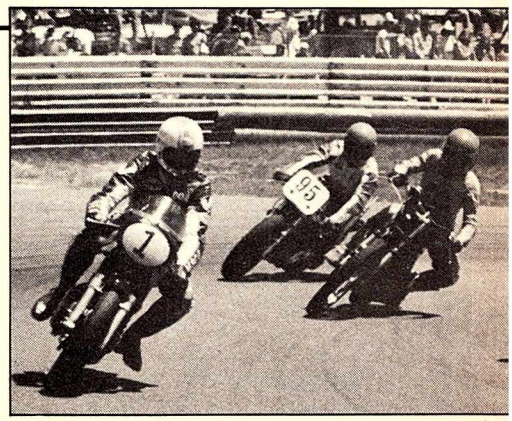
Which we did, we being an informal collection of owners and fans known as VROOM, short for Vintage Racers Of Old Motorcycles. A public appeal brought in scores of interested fans. We also got a president, in the form of Mike Lewis, who in real life is national service manager for Triumph's American branch. Mike owns something like nine BSA Gold Stars, a couple Triumphs and a Yamaha TD-1, plus he did all the grunt work of writing letters and making lists and preparing a proposal for the club that puts on the Laguna Seca races. Let us run, we promised, and we'll bring at least 25 vintage motorcycles, with riders in leathers and good helmets. We'll do the rules and the inspection and the whole thing.

It worked. We got most of the guys who ran the club's first event, and we got more people to haul the dusty old campaigners out of the back of the garage.

And we got the real vintage crowd. The Classic and Antique Motorcycle Association was having its annual meeting on the same weekend as VROOM's first race. An accident discovered too late. So for Laguna Seca CAMA president Frank Conley enlisted club members and his own collection.

Our reserved parking spaces, at the back of the paddock, were a show by themselves. American, Italian, English, Japanese and Spanish, with Harley, Bultaco, Honda, Excelsior, Norton, Ducati, BSA, Gilera, Vincent and Yamaha, all lined up for display. The paddock was semipublic, and we drew a good crowd. You could hardly hear the Nortons idling for the click of cameras.

We got practice on Saturday, then we went to a pizza parlor for the official banquet, then we had five hot laps on Sunday. What actually happened during the event I'm not sure, as me and Red Rooster were in the pack and all I could see was a couple hundred feet in either direc-



Around Turn 9 it's No. 1, Don Vesco on a Norton Manx on the outside, Jody Nicholas (58) and his Gilera 500 on the inside and Martin Vogel, no number Harley KR, in third. No. 95 is a Norton International and I forgot to write down the rider's name.

"Maybe I should try that Bakersfield line," said Freddie Spencer after his Superbike Production heat race at Laguna Seca. Spencer, 17, had just seen firsthand some of the tricks Ron Pierce, 30, has learned in 15 years of professional road racing.

Pierce beat Spencer in the heat race, just as he had beaten Spencer at Sears Point.

The key to Pierce's victory in both cases was his tight, inside "Bakersfield Line," named after Pierce's hometown in California, and it successfully thwarted young Spencer's every attempt to get past.

"It's just like dirt track," said Spencer, shaking his head. "If somebody gets out there on that groove and they've got power on you, you can't do anything. I could go two seconds a lap faster if somebody wasn't in my way. It's frustrating, but it's up to me to find a way to get by real quick before he can get back in front."

Spencer worried about offending his sponsor by admitting that his Kawasaki superbike wasn't as fast as Pierce's Yoshimura Suzuki, but that was no revelation to anybody who had watched the race. Pierce's bike was a lot faster, yet the race was extremely close.

"I don't know if I can hold him (Spencer) off (in the final race)," said Pierce after the heat. "He's really smooth in the corners, and my bike was wobbling>

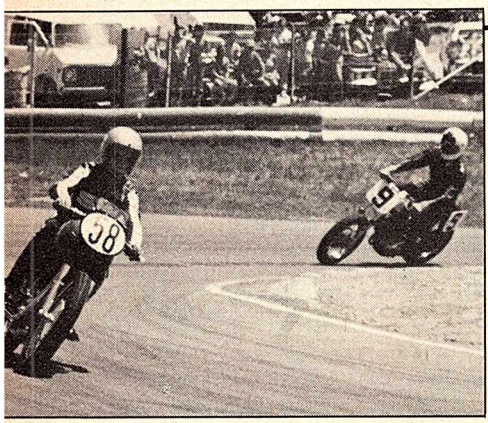


Photo by Henry N. Manney III

tion. One of the Norton riders said "That thing of yours is faster than I thought. I had to pass you in the corners," which puts me in my place. And I had a good dice with John Weed on a genuine production Honda racer, one of the CR125 Twins. I'd pass him on the straights, he'd get back in the twisty parts, etc.

Weeks later I asked Jody Nicholas about the unofficial results. "Was that John Player Norton in the race?"

"Oh, no, that guy showed up so we figured heck, let him run even if the bike is too new."

"Well then," Jody said, "I passed Don Vesco just before the last turn, so if the Norton wasn't eligible, I won."

So did we all. For fear of jinxing the project I won't say vintage bike racing is here to stay.

But old racing bikes are the wave of the future. ■

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Lightweight, comfortable protection is important on the racetrack — and that's just where Arai helmets are proving themselves to be right out front in top quality protection.

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Arai helmets are available from motorcycle dealers across the country through the distributors listed below, or write Arai Helmet Ltd. — P.O. Box 421, Tenafly, N.J. 07670.

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CYCLE WORLD TEST

SUMMARY

OFF-ROAD

Make & Model	Issue	Claimed Horsepower	Suspension Travel Front/Rear, in.	Curb Weight (w/half-tank fuel), lb.	Weight bias, Front/Rear, percent	Transmission, number of speeds
Bultaco Sherpa T350	7-79	20.8	6.5/5.5	207	45.5/54.5	5
CCM	5-79	na	11.0/11.0	250	47/53	3
Can-Am 370 Qualifier	5-79	38	10.0/10.0	258	46/54	5
Can-Am 250 MX-4	3-78	37.3	9.8/9.8	231	45/55	5
Honda CR125R	6-79	na	11.0/11.0	209	47/53	6
Honda XR250	7-79	24.6	8.8/7.8	268	44/56	5
Honda XR500	3-79	35.9	8.8/7.8	288	44/56	5
Husqvarna OR390	1-79	na	11.8/11.1	245	44/56	6
Kawasaki KX125	6-79	26.9	9.8/10.1	203	47/53	6
Kawasaki KLX250	9-79	21.3	9.8/10.1	243	46/54	5
Kawasaki KDX400	8-79	39.4	10.2/9.1	260	46/54	5
KTM 250 MC-5	11-78	34	10.5/9.0	237	46.5/53.3	6
Maico Magnum 250E	3-79	na	10.0/10.0	247	46.5/53.5	5
Maico Magnum 450	4-78	48	10.0/10.0	238	47/53	5
Montesa Cappra 360	11-78	na	10.0/10.7	243	46.5/53.3	4
Ossa SP250	8-77	na	6.9/5.0	230	45/55	5
Sachs Hercules GS250	1-78	32	8.5/5.1	266	44/56	7
Suzuki RM125N	6-79	na	11.2/11.0	204	47/53	6
Suzuki RM400N	2-79	na	11.2/11.8	236	46.6/53.4	5
SWM 250GS	4-79	35.6	10.0/10.0	239	45.7/54.3	6
Yamaha YZ125F	6-79	na	9.8/9.4	200	46/54	6
Yamaha IT175F	6-79	na	7.7/8.1	241	46.6/53.4	6
Yamaha IT250F	2-79	na	9.1/8.1	258	44/56	6
Yamaha YZ250F	3-79	na	10.6/10.4	226	46/54	6

STREET

Make & Model	Issue	Quarter-Mile, sec.	Top Speed after ½ mi.	Braking Distance from 60 mph, ft.	Curb Weight (w/half-tank fuel), lb.	Fuel Consumption, mpg
BMW R65	12-78	14.31	104	123	455	45.6
BMW R80/7	1-78	13.72	107	125	486	41.6
BMW R100RT	6-79	13.97	102	156	550	43.2
Ducati Darmah 900	5-78	12.98	111	134	500	41.7
Harley-Davidson Sportster XLS1000	5-79	13.98	104	144	541	52.0
Honda CB650	2-79	13.29	110	140	474	48.5
Honda CB750F	11-79	12.54	117	135	540	48.0
Honda CBX	1-79	11.36	132	120	580	39.2
Honda CX500	5-79	13.99	103	145	473	51.8
Honda GL1000	10-78	13.52	111	136	641	42.0
Honda XL185	4-79	17.81	69	165	249	75.0
Honda XL500	9-79	15.02	91	134	304	65.0
Kawasaki KZ400	1-79	15.60	91	139	386	62.5
Kawasaki KE250	11-79	17.30	75	132	284	57.0
Kawasaki KZ1000 Mk.II	8-79	12.12	121	142	571	41.6
Kawasaki KZ1000 ST	8-79	12.49	120	152	602	41.6
Kawasaki KZ1300	4-79	11.93	139	146	695	42.3
Laverda Zeta 500	7-78	14.05	97	123	397	38.9
Laverda Jota 1200	9-78	12.14	124	132	527	37.4
Suzuki GS425	9-79	14.43	98	141	399	52.0
Suzuki GS750EN	4-79	12.72	119	141	547	45.2
Suzuki GS850	3-79	12.70	122	129	587	41.9
Suzuki GS1000L	7-79	12.48	122	133	536	43.6
Triumph Bonneville 750	4-78	13.86	103	126	425	42.0
Yamaha RD400F	7-79	14.18	98	131	372	44.0
Yamaha XS400F	10-79	14.58	97	138	390	58.0
Yamaha XS650F	3-79	13.86	105	145	481	51.4
Yamaha XS750SF	5-79	13.33	114	144	546	43.6
Yamaha XS1100SF	2-79	12.02	129	146	584	40.0

Missing an issue? They're available, dating back one year, from Cycle World Reader Service Dept., 1 Fawcett Place, Greenwich, CT. 06830, for $1.50 each plus 50¢ per order for postage and handling.

Fast Freddie Spencer (8) learned in the Superbike heat race that getting past Ron Pierce's Bakersfield Line can be tough.

and hopping up and down in the turns when we got going as fast as we did."

Both Pierce and Spencer turned lap times in the low 12s throughout the five-lap heat, with Spencer nicking into the high 11s with a 1:11.89 on his second lap.

In the second heat, Pierce's Yoshimura teammate, Wes Cooley, ran away from Spencer's Kawasaki teammate, Rich Schlachter, whose Kawasaki superbike had less shock laydown than Spencer's, and thus didn't handle as well. In the second heat, Cooley turned a best lap of 1:12.50. "I wish I had been in that first heat," said Cooley afterwards. "It would have pushed me a little harder."

But even being pushed a little harder didn't put Cooley out front in the final. Instead, Fast Freddie found his way around Pierce by beating everybody off the line and slamming the door hard as Pierce tried passing on the inside of the first turn. So close and violent was Spencer's cut-off of Pierce that Cooley edged past in the confusion, and the finishing order was set: Spencer, Cooley, Pierce.

The only question that remained was simply how fast Freddie could—and would—go. He answered it by doing exactly what he said he could do, given a clear track. Spencer started out turning low 1:11 laps, did one circuit at 1:10.9, and then circulated in front of a several-second cushion for the rest of the race, turning 11s and low 12s.

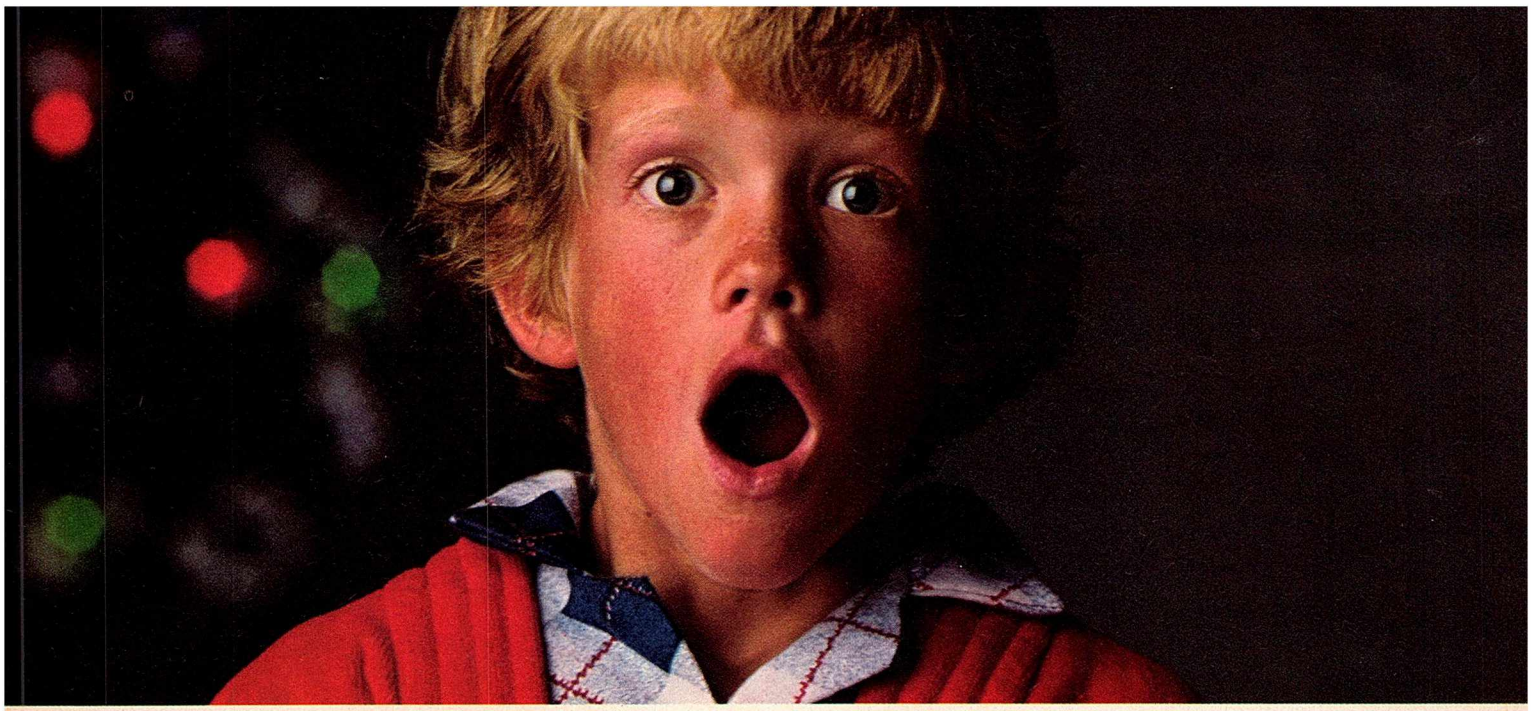
The racing was for fourth, between Schlachter, Harry Klinzmann, Steve McLaughlin and Chuck Parme. By the time it was all over, they finished in that order.

Fast Freddie, by winning at Laguna Seca, collected a $10,000 bonus to add to the $5000 bonus he got for victory at Sears Point.

That's not bad money for a 17-year-old. ⊠

Results

1. Freddie Spencer ..... Kaw
2. Wes Cooley ..... Suz
3. Ron Pierce ..... Suz
4. Rich Schlachter ..... Kaw
5. Harry Klinzmann ..... Kaw
6. Steve McLaughlin ..... Kaw
7. Chuck Parme ..... Kaw



HOW TO MAKE YOUR KID LIGHT UP FOR CHRISTMAS.

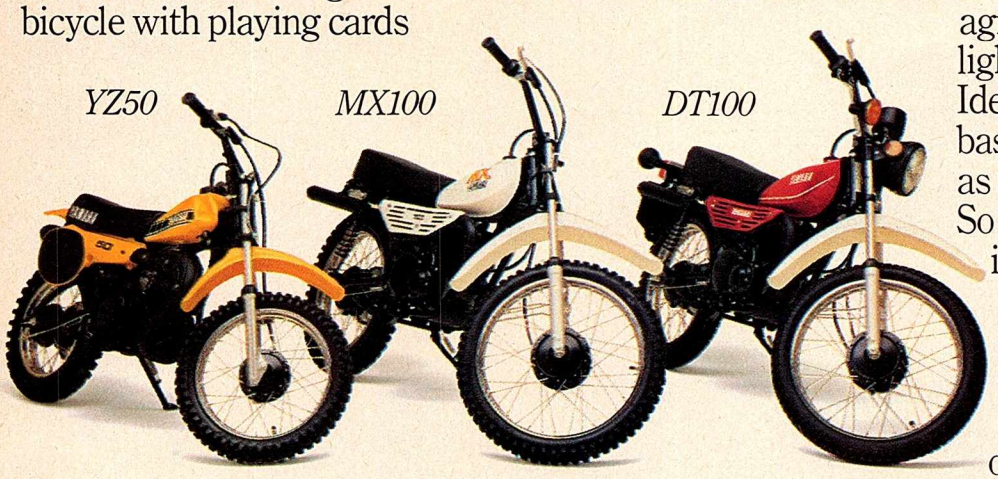
If you know a little someone who's been riding a bicycle with playing cards clothespinned to the frame so the spokes make motorcycle noises, here's an idea for Christmas.

A motorcycle.

Your Yamaha dealer has *real* bikes in as many different shapes and sizes as there are kids.

For aspiring competition riders, consider our very competitive YZ motocrossers. Lightweight, agile, and plenty powerful.

Or, for kids whose idea of competition is just seeing who can have the most fun in the dirt, our dirt play bikes pack all the horsepower a kid could hope for in an easy-handling, motocross-style frame.



Our dual-purpose DT models combine off-road agility with full street-legal lighting and instrumentation. Ideal for anyone needing basic transportation as well as a basic good time.

So whether you have a good idea—or absolutely no idea—of what your half-pint hopeful wants, your Yamaha dealer can help. He'll also give you 10% off on a Yamaha helmet if you bring in the coupon below.

And he'll see to it you turn up the king of hearts on Christmas morning.

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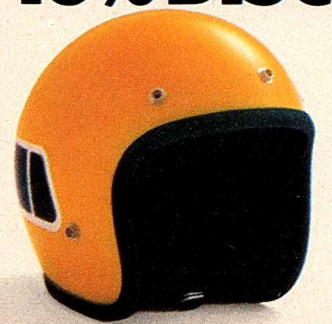

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KZ650

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But if you tell us the cost of a new 1000cc motorcycle is the only way you can get into the muscle-bike mainstream, we'll tell you to blow it out your collector.

Because we know better. From experience. With a three-year-old 650cc or 750cc four-cylinder motorcycle and a little help from your friends at R.C., you can run heads up with almost any of the new superbikes.

And compared to what you'd have to pay for one of the new biggies—on an average, $3643*—plus the difference in insurance, you'll save bucks in a big way. Enough for a trick paint job, a set of tires, a new chain, new brakes, a new jacket, a helmet for your girlfriend, and a summer's worth of gas.

Does that sound like a lot of change? Check the figures.

We started with a motorcycle budget of about $950** for a three-year-old Kawasaki KZ650. You may find a better deal on some other bike; we use the KZ650 strictly as an example.

A stock KZ650 is a 13-second motorcycle at the dragstrip. But with a street legal R.C. 4-into-1 exhaust system, 717cc kit, high-lift cams, heavy duty valve springs, and heavy duty clutch kit, this little Kawi can run low 12's all day long. Which means you've got yourself 1000cc class performance for about $1700. And to top it all off, you're going to get improved day-to-day gas mileage.

It's superbike performance with reliability, R.C. style. We know it works. Because it's what we win with.

*Based on six 1000cc+ superbikes tested by CYCLE WORLD in 1979: Average 12.15 sec. E.T., 110.76 MPH, $3643 list, $727 insurance.

**Based on 1979 Kelly Blue Book: $950 market value for 1977 Kawasaki KZ650B1.

THE GIANT KILLER

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	1977 Kawasaki KZ650	$950.00
1007	R.C. High-flow 4-into-1 exhaust, chrome finish.	179.95
RC410	High-lift, hard finish, competition camshafts.	210.00
K717	R.C. KZ650 717cc Big Bore Kit—Four forged silicone aluminum alloy pistons with rings, wrist pins and aluminum wrist pin buttons.	204.50
1059	Heavy-duty shot-peened silicone alloy valve springs with alloy collars.	47.50
1347	Bonded alloy competition clutch kit.	67.50
	Cylinder overbore cost (approximately).	40.00
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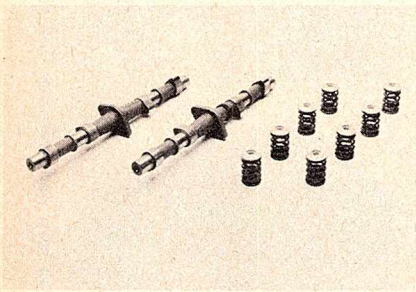

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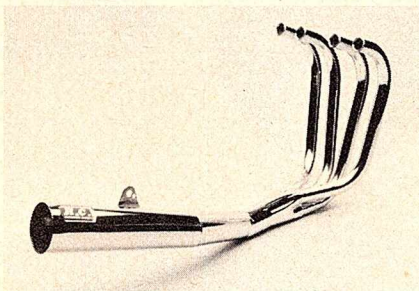

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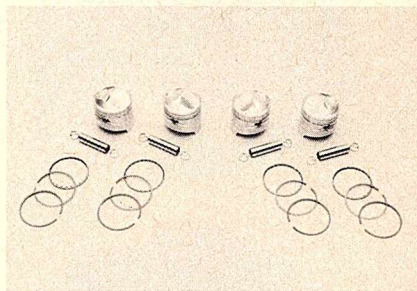

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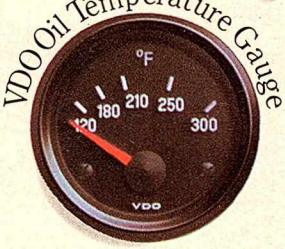

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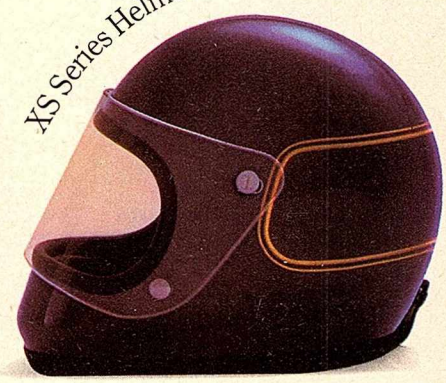

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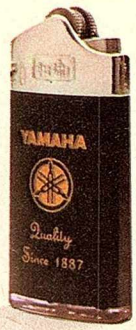
XS Leather Jacket



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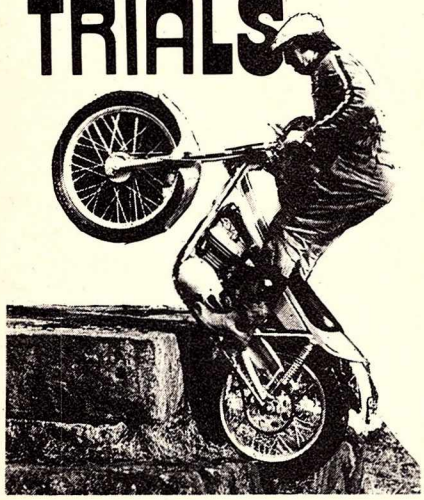
THE MICK ANDREWS BOOK OF TRIALS



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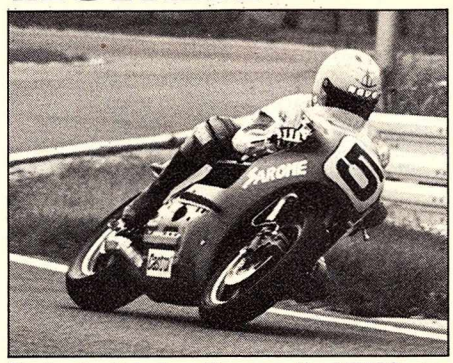

During tests before the race, the NR500 was close to the class lap record at Donington Park, a handling track. Rider here is Takazumi Katayama.

continued from page 75

Time to sum up. To put the record in perspective, remember that after Honda knocked the other motorcycles out of the ring and walked away, figuratively dusting hands, Honda got into Grand Prix car racing.

They had a car that was different, they hired good drivers and spent piles of money and after several years the Honda GP car could win . . . if the faster cars flung themselves into the trees or blew up.

Honda has on occasion done the impossible.

Honda has also failed.

After the British GP Mike Hailwood and Phil Read agreed on something, perhaps for the first time in their lives.

Honda has done it wrong, they both wrote. The way to win would be to build two-stroke fours, with tube frame, etc., and get down to racing and winning without all this technical mumbo jumbo.

They missed the point entirely. Winning isn't everything. Honda wants to win by Honda's own standards, by doing it the way Honda thinks it should be done.

More power to them, I say. Right, I am partisan in this. Racing is too important to be left to the racers.

How much of what Harley has learned from the XR750 appears on this year's XLCH?

How has the Suzuki RG500 made a better machine of the GS550?

Just what does the Yamaha TZ750 have to do with the XS850?

Now look at Honda. The CBX, the CB750, the CX500, even the XL250, they all sparkle with what Honda learned first time this happened.

The Honda NR500 didn't win its first race. Honda built a smoke-and-mirror machine, pumped us all up and then, right in front of 100,000 fans and worldwide television, the NR500 fell down and went boom.

Let the verdict come from the man who was most in view when the NR500 failed: Mick Grant.

"I'm not disappointed.

"They had to learn how far they have to go.

"Now they know." ◙

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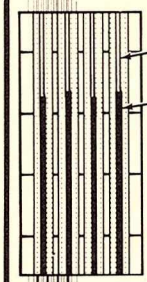

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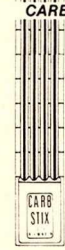

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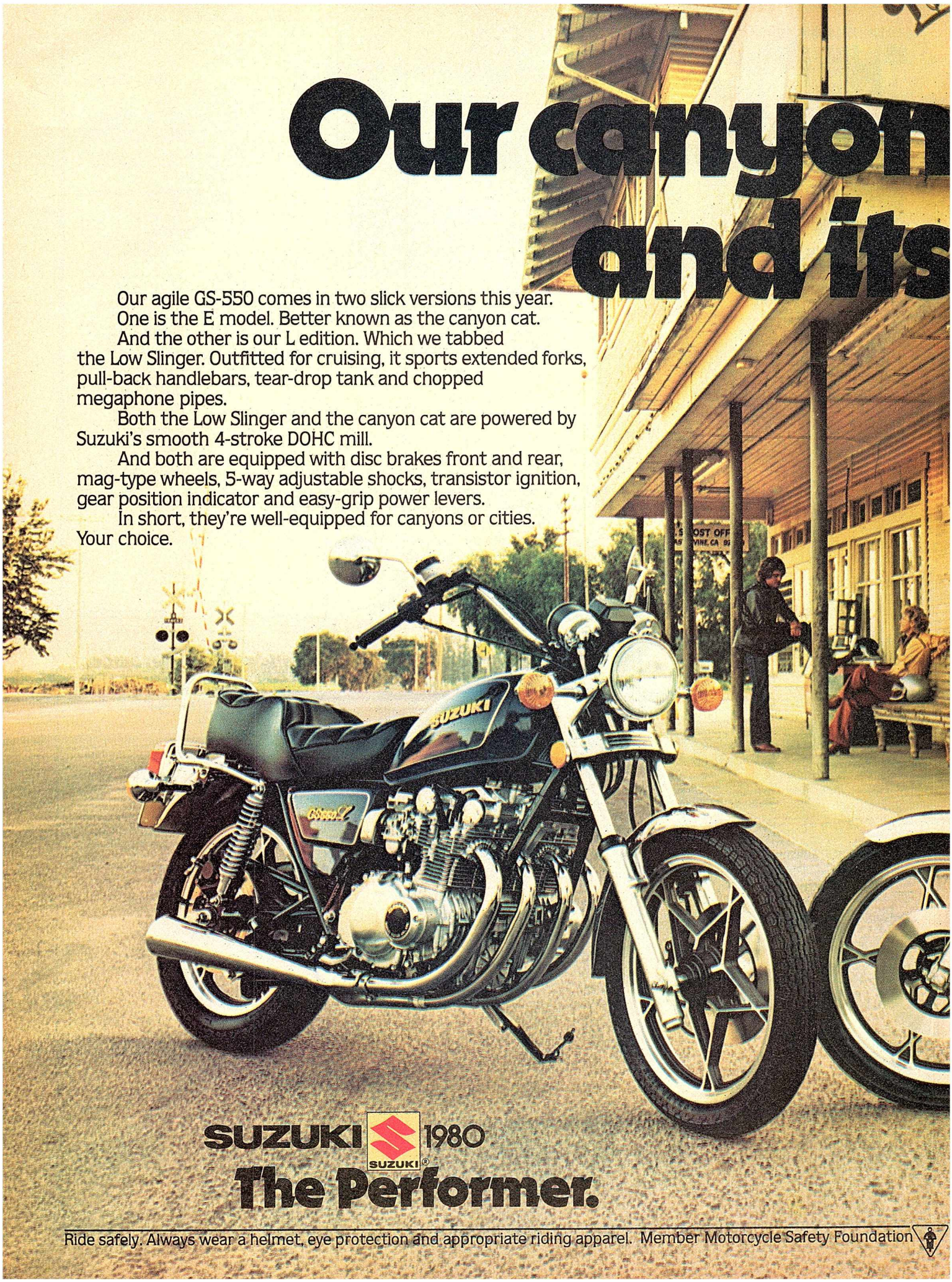

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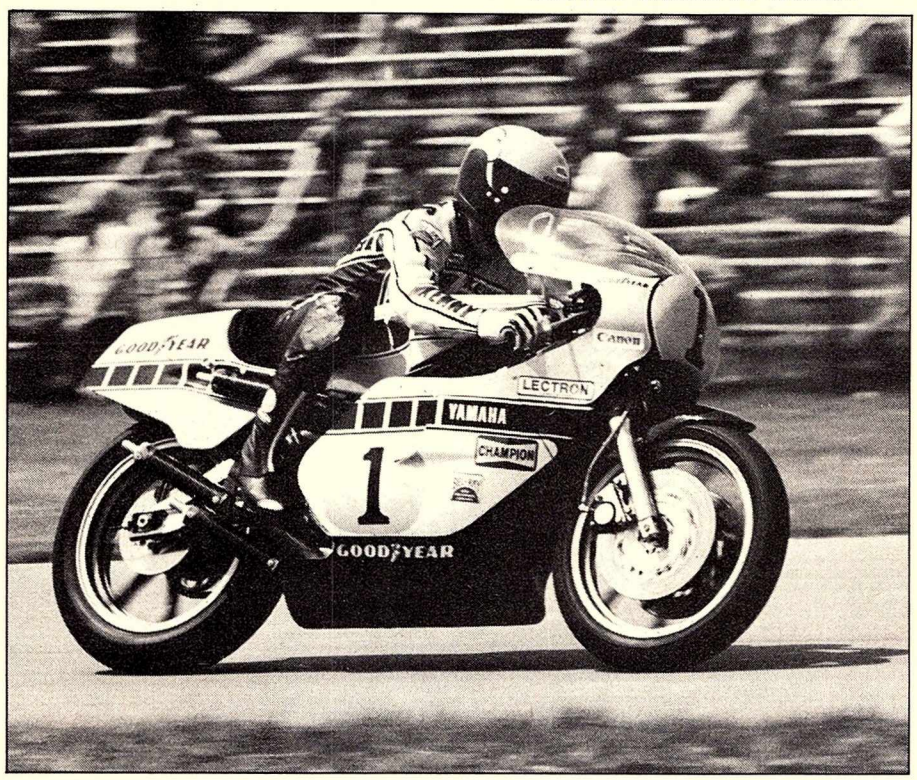
RACE WATCH

ROBERTS QUITS WINNERS . . . AND TAKES THE CIRCUS WITH HIM

KENNY TAKES IT AGAIN



Kenny Roberts, on his way to his second (and, he says, his last) world championship.

Kenny Roberts won his second world 500cc roadracing championship in a dramatic finish at the French Grand Prix. And Roberts says he and the other top riders competing in the FIM series won't be back next year.

The French round was typically sensational in what has been one of the best seasons in years. At the start, Roberts had the points lead and the only rider who could challenge him was **Virginio Ferrari.** Roberts, Ferrari, **Barry Sheene** and teenage Californian **Randy Mamola** got into a scrap for the lead, then Ferrari slid wide while in second. He dropped to seventh place, but while battling back toward the leaders he tried to pass **Johnny Cecotto** on the outside and crashed heavily. (Ferrari was taken to the hospital, and later reports said he was injured but will recover.)

With his only threat out, Roberts could have coasted to a finish and a secure title. Kenny doesn't work that way. He, Sheene and Mamola kept up the close racing, with the new kid even taking the lead a couple of times.

Going into the last lap, Roberts went off the course while avoiding two lapped riders who crashed in front of him. The engine quit, so Roberts bumped it back into action and still managed to finish third, with Sheene the winner and Mamola second.

Traditionally, this would be the time and place for the champion to talk about next season.

Roberts doesn't work like that. Instead, Kenny announced his plans the day before the British Grand Prix, before his second world crown was officially his.

What Roberts said, in effect, was that he will not run in the FIM's races next year, and that neither will the other top riders.

A virtual revolution, in short.

That Roberts has not been happy with the FIM isn't news. His two seasons in Europe have been marked by haggles over starting money and by petty interferences over passes and the like. Roberts says he feels as if the riders are treated as hired hands, paid performers who can be summoned or dismissed or ordered about as the officials please.

The surprise at the British GP was that Roberts isn't alone in this. Roberts, Sheene, Ferrari, Cecotto, Hartog, a total of 40 riders, the ranked members of the racing world, have backed the new series.

The name will be the World Series. There will be two classes, 500 and 250cc. The riders have formed their own organization. They offer their services, the various tracks accept and apply for dates and the whole series is supposed to run under FIM rules, as an international race, rather than a world championship race.

Now it gets tricky. The idea is that the tracks will apply for dates, and the factories will go along, which will make the series so successful that the public forgets about the FIM.

There's not enough space here for details, and none of the above seems as firmly fixed as Roberts would like. Honda is opposed. They want to win the world title, plain as that . And the Honda riders, **Mick Grant** and **Takazumi Katayama,** are the only top world racers who didn't sign with Roberts. Their contracts forbid it.

Meanwhile the various tracks are beginning to worry. If they sign with the riders, will they get other dates and sanctions? What about all the support classes, the 125, 250 and sidecar titles?

Most important, will Yamaha, Suzuki and Kawasaki let Honda win the FIM title by default, just so their teams can put on good races?

Probably not. Later this year, at the FIM Congress, push will come to shove.

Meanwhile, Kenny says he's ridden his last FIM race, and rumor has Yamaha sounding out other racers in case there's a vacant seat on the team. >

Photo by John Ulrich

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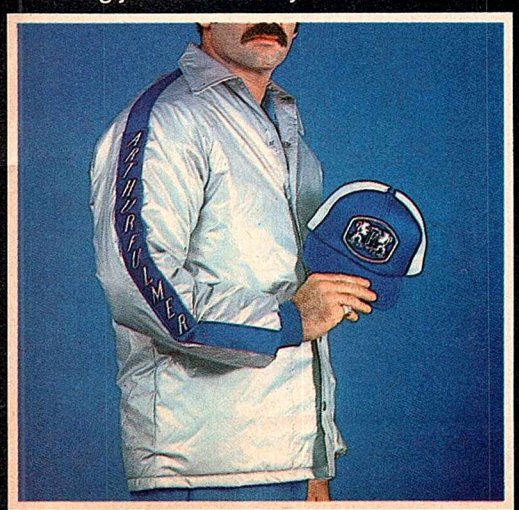

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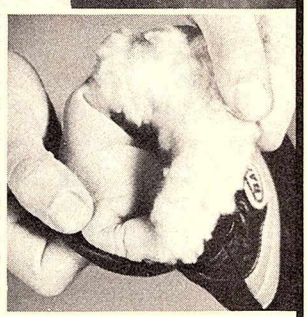

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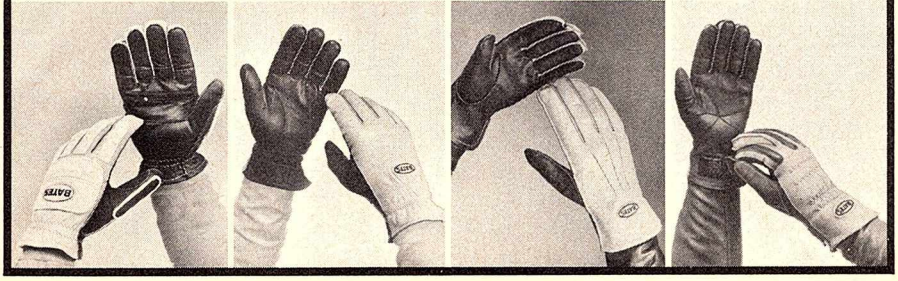


RACE WATCH

SCHREIBER WINS WORLD TITLE

California Whiz Kid **Bernie Schreiber** won the Czechoslovokian round of the world trials championship, and became the first American world trials champion.

Bultaco-mounted Schreiber was top man on all three loops of the Czech course. His victory there put him 10 points ahead of **Yrjo Vesterinen**, who also rides for Bultaco and who had won the world title three years running. Swede **Ulf Karlson**, Montesa, was third for the year.

Schreiber was a California sensation when he was 14 and turned in better rides than the experts he wasn't old enough to officially compete against. Two years ago he entered international trials events. He was seventh for the 1977 season and gave himself two more years to become champion. Schreiber is the youngest rider to win an FIM world title.

COLEMAN/BEVANS WIN LAGUNA SECA SIDECAR RACE

In a come-from-behind charge, the **Larry Coleman/Mark Bevans** Yamaha topped a very close sidecar race. With a new bike, passenger and motor, Coleman fluffed the start and finished the first lap sixth. Last year's winners **Richard/McKinna** (Yam.) were shunted out when their motor stumbled off the line. The race quickly settled into a five-way scrap for the lead, with lap two scoring: **Bryant/Essaf** (Kaw), **Breese/Morris** (Kaw), **Hopp/Alston** (Kaw), **Lougee/Harrold** (Kaw), and Coleman/Bevans. Less than 3 sec. separated first and fifth.

Halfway around lap three, leading passenger Pete Essaf missed a handhold and driver Kerry Bryant flipped the rig off of turn three, leaving the order Breese/Morris, Lougee/Harrold, Hopp/Alston, and Coleman/Bevans. Same lap, exiting the corkscrew, Ken Harrold's newness to Lougee's outfit caused them to part company. (Ken was "loaned" the ride only that morning by Sears Point winner Carter Alsop, who was bruised from a fall in the same place after winning Saturday's heat race).

Coleman managed to get between Hopp and Breese on lap five, then nailed the lead>

Illustrations by P.M. McKenna

SERVICE

We welcome your technical questions and comments, and will publish those we think are of interest to our readers. Because of the volume of mail received, we cannot return any personal replies. Please limit your "Service" letters to technical subjects only, and keep them as brief as possible. Send them to: "Service," CYCLE WORLD, *1499 Monrovia Ave., Newport Beach, Calif. 92663.*

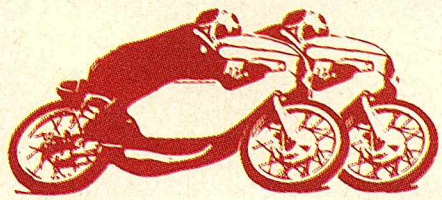
CLUNKY YAMAHA

I purchased a new 1978 XS11 Yamaha this June and with 5000 km on the speedometer I am experiencing a problem with the front fork.

When first starting off, especially over bumpy ground, I get a loose clunky feeling which can be felt through the handlebar. At very low speeds going into turns, if a crack or bump in the pavement is hit, I get a slight wobble in the fork. At moderate or high speed there seems to be no problem.

The oil was changed in the forks at 3000 km as per the service manual instructions using the correct amount and viscocity. There are no oil leaks from the seals.

I have checked the steering head bearings for tightness and adjusted as advised by Yamaha. I could find no torque setting for the bolt and had to play this by feel. With the front wheel off the ground, grabbing the forks does not produce any movement that would indicate the steering head being loose. I have no accident damage in



the forks. There is no dealer in the area, your advice would be appreciated.

D.G. Frederick
Happy Valley, Labrador, Canada

Although the XS11's front fork provides an excellent ride, it isn't the greatest for torsional rigidity and is the weakest link in the Yamaha's chassis. So even at its best a hard rider will find fault with the fork when he's charging over bumpy bends.

However, it shouldn't display the clunky feeling you're getting and the only way to eliminate it is by checking out the whole front-end assembly, bearing in mind that the fork yoke pinch bolts have to be tightened in a specific order.

First, slacken the axle clamp bolts on the left slider along with the top triple clamp bolts, plus the steering stem top nut and clamp bolt. Tighten the main wheel axle nut (76 lb.-ft.) so that the wheel is pulled against the spacers and fork slider. The bottom triple clamp bolts should now be tightened to between 12 and 16 lb.-ft. (1.7 to 2.2 kg.-m.) ensuring that the tops of the legs are adjacent to the upper surface of the top triple clamp. Now adjust the clearance of the steering bearings so that the fork will just swing from a center position without binding when the wheel is clear of the ground.

The fork legs can then be aligned by pumping the suspension with the front brake on and as a second check, viewing the parallelism of the legs by eye from one side. The steering stem top nut can now be tightened down and the clamp surrounding it bolted up to the same torque as the bottom triple clamp bolts (they're the same size, 8mm). This done, the top triple clamp bolts can be tightened (again to 12 to 16 lb.-ft.) along with the wheel axle clamp bolts (front, then rear—14.5 lb.-ft. or 2 kg.-m.). >

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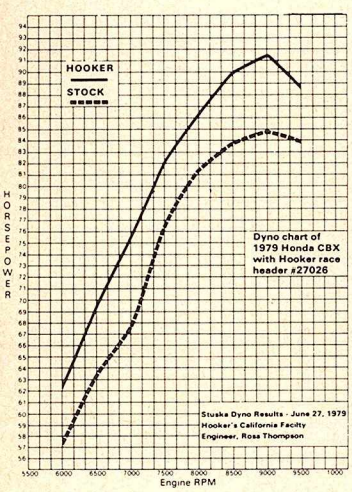

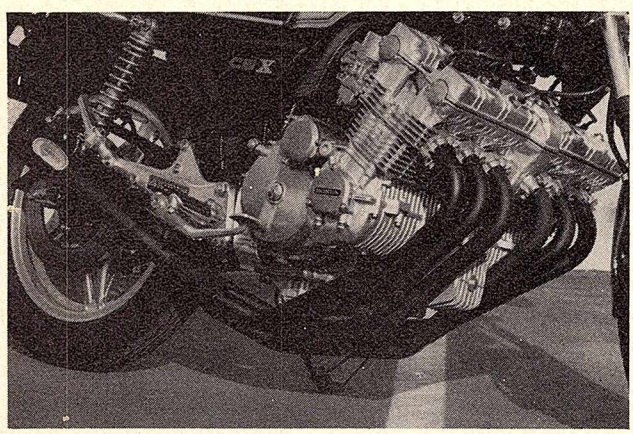

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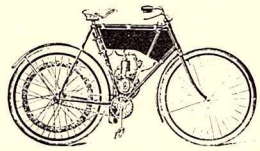

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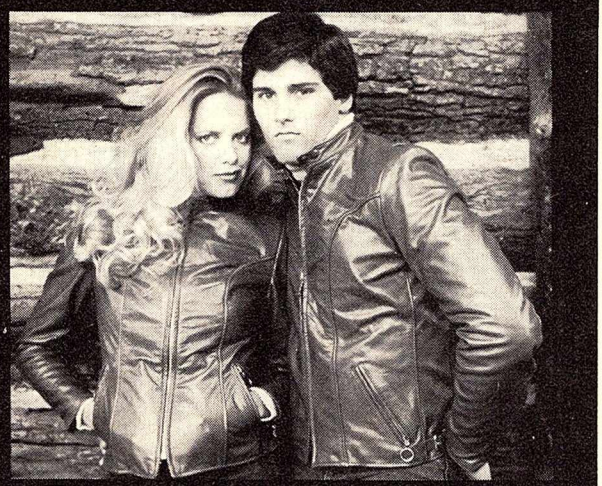

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RACE WATCH

on lap seven. Under constant pressure, Coleman hung on to the end. But Breese/Morris weren't as fortunate as Hopp/Alston stuffed their rig inside them, last lap, last turn, to take second.

Ken Harrold's third lap fall transitioned from a slide to a "Warp 5" run down the edge of the six-seven straight to rejoin a waiting Lougee. With his ballast back, heat winner Lougee blasted back from 14th to sixth, taking fifth in the last corner, last lap. —*Walt Garnett*

Results:

1. L. Coleman/M. Bevans..... Yam
2. W. Hopp/B. Alston..... Kaw
3. V. Breese/J. Morris..... Kaw
4. D. Rowe/D. James..... Suz
5. W. Lougee/K. Harrold..... Kaw

NMRA 1980 DRAG RACES

The newly-established National Motorcycle Racing Association (NMRA) division of the National Hot Rod Association (NHRA) has announced its 1980 drag racing schedule. Professional classes will include Top Fuel, Super Eliminator and Pro Stock. Sportsman classes will consist of Pro Comp, Modified, Competition, Stock and Combo eliminators. In addition to the six NMRA events, Top Fuel and Pro Stock riders will be able to compete and earn points at two NHRA nationals, for a total of eight Top Fuel and Pro Stock races.

NMRA events in 1980 will take place at Gainesville, Florida on April 12-13; at Epping, New Hampshire on May 24-25; at Cincinnati, Ohio on June 14-15; at Indianapolis, Indiana on July 4-5; at Fremont, California on August 9-10, and at Atco, New Jersey on September 27-28. Pro Stock bikes will also run at NHRA events at Gainesville, Florida on March 14-16 and at Baton Rouge, Louisiana on April 25-27. Top Fuel bikes will run at NHRA events at Indianapolis, Indiana on August 27-September 1 and at Ontario, California on October 4-5.

Further information is available from NMRA, 412-414 W. King St., York, Pa. 17404, (717) 854-1768.

ROAD RACING IN HAWAII

The Hawaii Road Race Association is holding regular sprint and endurance events on the island of Hawaii. Interested racers or spectators can get more information by writing to the Hawaii Road Race Assn., 901 California Ave., Wahiawa, Hawaii 96786. Annual membership is $12. According to a recent press release, a 15 in. mongoose was flattened at the last HRRA event. And we thought ramming rabbits at Willow Springs was exciting!

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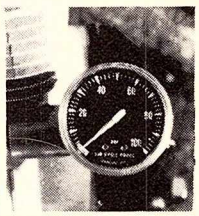

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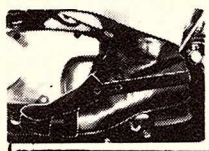

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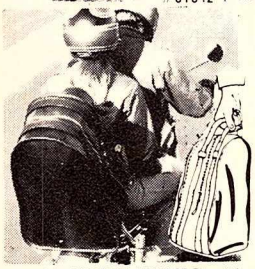

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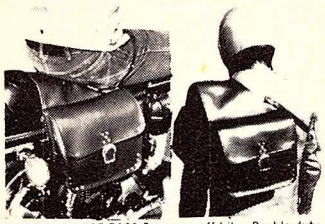

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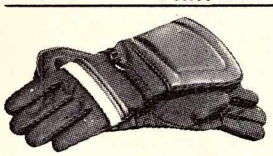

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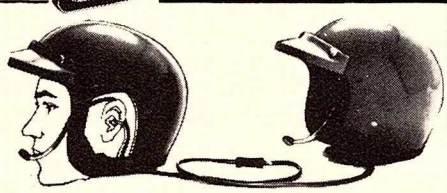

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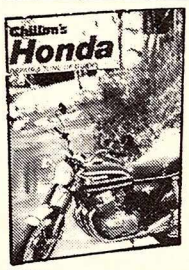

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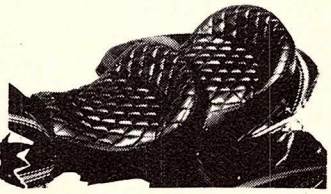

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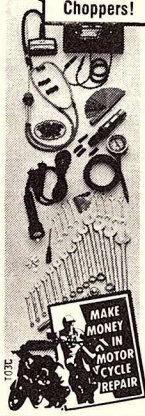

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As a final check, go over the brake caliper bolts for tightness as well as the fender supports—the clunking could come from there. And on the stock Bridgestone front tire, the pressure is critical for the best handling. This should be between 28 and 36 psi.

ILLINOIS TIPS

I read your Service column with sincere interest each month but haven't seen anything to help me with my current problem—replacing mufflers on a '73 Honda CB350 and a '72 CB450.

Can you tell me how I might detach my current deteriorated mufflers from the otherwise good exhaust pipes and replace with a suitable muffler? I'd like to avoid the high-priced, complete exhaust pipe and muffler replacement Honda has available.

Any info or any place you can direct me for this would be appreciated. I'm looking for a more economical replacement and the size and length is secondary.

C.A. Rhines,
O'Fallon, Ill.

There are several possible muffler replacements you could use, in particular those made by Jardine, MCM or Dunstall, but we couldn't guarantee whether these would be available from a local dealer. And it is important to try the muffler for size before you buy. So that cuts out mail order.

We suggest you contact Russ Johnson at Nichols Motorcycle Supply (4135 W. 126th St., Chicago, Ill. 60658, (800)323-4488). They are wholesale suppliers of mufflers in Illinois and should be able to put you onto the nearest dealer with a wide range of stock.

BIG K BREATHING

I own a '77 Kawasaki Z1000 with an RC 4-into-1 pipe and a Martek 440K ignition. In your recent articles on the Dunstall Suzuki and the 750cc Suzuki endurance racer you sparked a desire to go to Mikuni's 29mm carburetors with, possibly, stacks.

My questions are: Do you think the Kawasaki's head would benefit from such a modification without a port and polish and would this adversely affect low speed and mid-range response and smoothness?

I read somewhere that the Z's head seldom needs work except in radical modifications. Is this true or false?

K.A. Riley,
Lincoln, Ill.

In short, the answer is yes. You can expect a marked improvement in top-end power by the simple replacement of the stock 26mm Mikunis on the '77 KZ1000 with a quartet of 29mm Mikuni smooth bores, particularly if you remove the air intake silencer and filter and accordingly jet up the carburetors.

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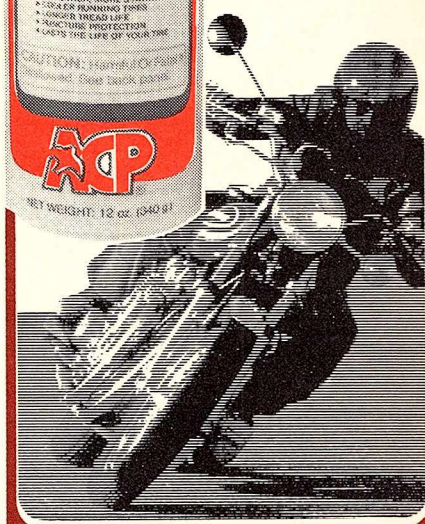

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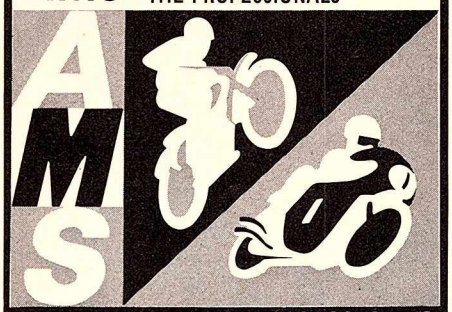

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SERVICE

ter. There's a packing piece inside the throttle slides that minimizes the interruptions in air flow found on the conventional Mikunis. However there's a catch if you want to use the bike on the road. The smooth bores have elementary idling circuitry since they are specifically designed for wide open performance. But if you can handle the lumpy metering at town speeds, go ahead.

A more elegant alternative is open to you, though. You can use the 28mm Mikuni carburetors fitted to the pre-KZ900 models and the '79 KZ1000. Much of the restriction in top-end power on these models is caused by the air intake so if you use the recalibrated 28mm carbs with stacks you'll get the best of both worlds—performance and manners.

The head on the KZ1000 is more than adequate for road use. It's only when you want it to breath the amount of air that 31mm CR Keihins can flow for racing that modifying the porting shows gains.

TRADE, NOT TRICK

I wish to get more travel out of my Yamaha DT250's shocks. I only want about 2 in. more travel and I don't really want to get a new swing arm.

I would like to make the 250 into a 400, but don't want to replace the engine. The only differences other than the bore and stroke are the alternator and ignition.

The 250 uses a magneto and the 400 uses a CDI system. Do I have to make these changes or are my systems sufficient? To save the expense of making a 400 how could I get optimum performance from a 250 engine?

Can I bore out a 250? What kind of carburetor and expansion chambers, etc. can I use?

M. Kwazinski,
Chicago, Ill.

We hate to say this but the amount of time, effort and money that you'll put into improving your DT250 Yamaha will be much greater than simply trading it in for a DT400 model.

Projects of this sort inevitably founder in a sea of hidden rocks. For example, increasing the rear wheel travel will provoke problems with the now inadequate front fork, so that will have to be uprated. And the similarities between the 250 and the 400 are more subtle than you might imagine. We know people who've tried it the hard way. Believe us, it doesn't pay off.

YAMAHA ECONOMY

I am writing you regarding the optimal engine rpm for mileage, driveability and prolonged engine life for my '78 Yamaha XS750E. I have heard several theories on this subject, but would like your opinion.

One theory has it that high revs are best (over 5000) for normal driving. Proponents>

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of this theory claim the following:

1. Faster circulation of oil, thereby eliminating hot spots in the engine and reducing overall temperature of the engine.

2. Higher volumetric flow of air through the engine and therefore a "breathing cooling effect."

3. Piston speeds more appropriately match flame propagation speeds therefore reducing and lugging detonation (knocking).

The other theory says that you should drive or run the engine at the lowest rpm possible without lugging the engine. In my case with a three-cylinder 750cc four-stroke, an rpm around 3500 to 4000.

Proponents of this theory state that it is best to avoid needless high engine revs. If the engine isn't under load, keep the engine revs down. The theorists claim:

1. The higher the rpm, the higher the piston and bearing speeds resulting in wear. Also piston travel increases.

2. Higher engine revs cause greater vibration which is annoying and can be damaging.

I'm sure you've had this letter before but I can't find it in the past couple of year's issues. I don't expect a magic answer.

C. Scott
Minneapolis, Minn.

There can be no hard and fast rules when trying to obtain the maximum mileage and life from engines since they can be so variable in construction and character. For example, you couldn't apply the same riding techniques to a 125cc two-stroke as you would a 1200cc four-stroke V-Twin.

The best way to run your Yamaha is to treat it as though you were breaking it in. This means running the engine at as light a load as possible never using, say, more than half throttle except when you need hard acceleration for overtaking.

Since your engine produces more torque at higher revs (the max is 6500 rpm) you will benefit from running it to around 5000 or 5500 when going up through the gears as opposed to lugging it. Nothing will be gained (except thrills) from taking to the red line because although the engine is making more power it's in fact less efficient on fuel.

It is important to use the gearbox to keep the engine spinning. If you don't get response from a properly tuned engine then change down a gear, it'll run much more economically.

However, the speed at which you cruise the freeway depends on whether you want to pay for the extra fuel that high speeds demand. Running at higher revs will only wear out you and the engine prematurely.

As a postscript, we once saw an engine stripped that looked as if it'd never been run. You could still see the machining on the pistons after 6000 miles. The reason? The owner had never taken it over 4000 rpm and never run it hard.

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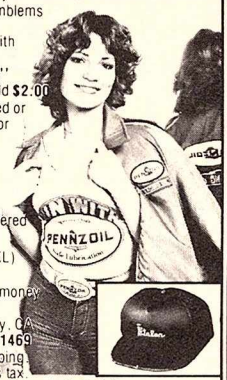

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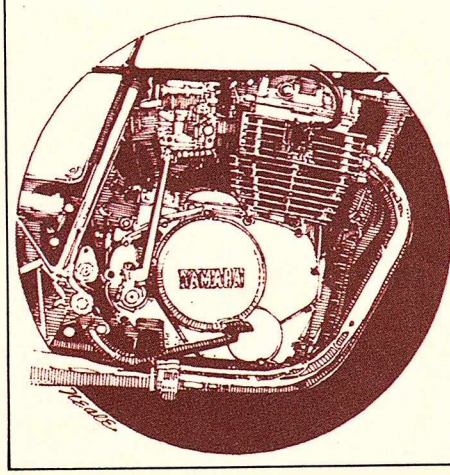

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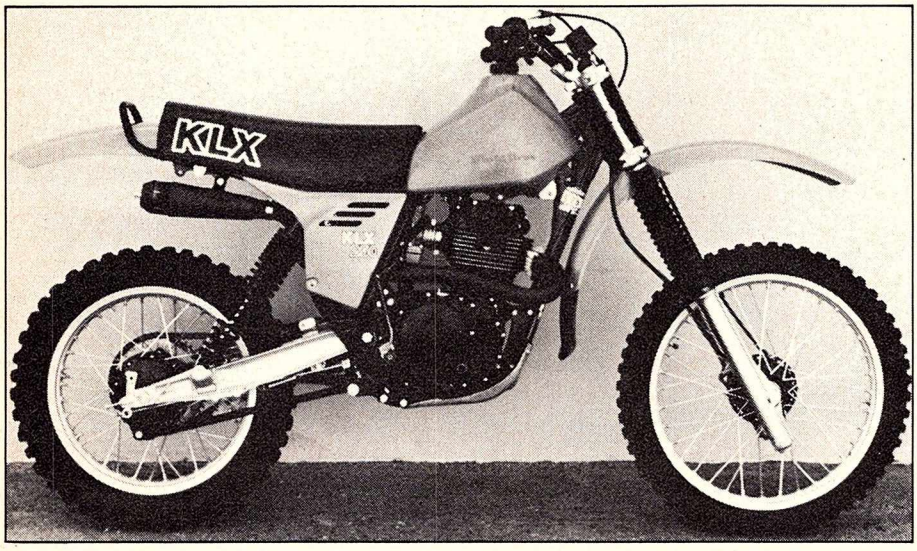

WHITE BROS. KLX 250 SPEED PARTS

White Bros. has developed three different engine kits for the KLX 250. Separate pieces including exhaust pipes, silencers, carburetors, big bore kits and head porting are available. Want more information? White Bros. Cycle Specialties, CW-12, 11611-M Salinaz Dr., Garden Grove, Calif. 92643

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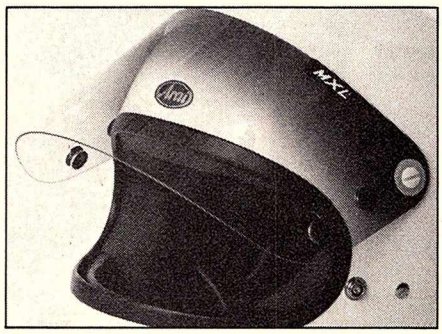
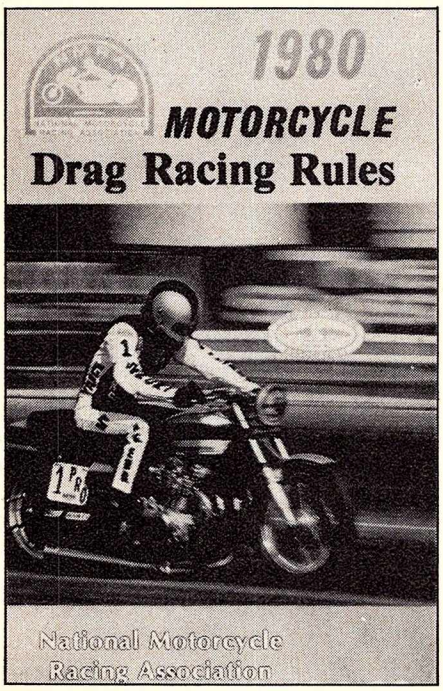
National Hydron's MXL scratch-resistant and Hydron anti-fog face shields, are now available with a gradient tint. Price is approximately $1 more than that for a standard clear or full-tint MXL or Hydron treated shield. Available for most major brand helmets at motorcycle dealers or contact National Hydron Inc., CW-IZ, 1764 Rohrerstown Road, P.O. Box 222, East Petersburg, Pa. 17520. Phone (717) 569-8711



NMRA RULES BOOK

The National Motorcycle Racing Association has finalized the 1980 Rules Book for distribution November 1, 1979. The book has been compiled by experts in the field of motorcycle drag racing and is a must item for the competitor and enthusiast involved in motorcycle drag racing. Contact NMRA, CW-12, P.O. Box 1320, York, Penn. 17405



CLARK'S 3.2 GAL. HONDA CR250 TANK

This new tank has an O-ring sealed cap, uses the standard Honda petcock, and bolts directly to the stock mounts in less than 10 min. It is constructed from Phillips crosslinkable polyethylene plastic and available in red, white, blue, orange, yellow, silver, or green. The large CR Honda tank maintains the distinctive Honda shape and comes with a one year guarantee. Check your local dealer or contact Clarke Manufacturing Co., CW-12, Rt. 1, Box 576, Mulino, Ore. 97042. Phone (503) 829-2156

LARGE SHELL SCOTT BOOTS

Scott's large shell plastic boots are finally available. The medium size has been on the market for almost a year. The large shell accommodates feet in sizes 11, 12 and 13. Like the medium shell jobs, outside dimensions are the same for the three sizes, and fitting is accomplished with high density foam liners. See any Scott dealer for more information.

SLIPSTREAM

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Photo by David Gooley

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